



TARGETS AND INDICATORS FOR CHRONIC DISEASE PREVENTION IN AUSTRALIA

2ND EDITION

Kevin McNamara, Michael Livingston, Kypros Kypri, Jaimie-Lee Maple,
Adrian Bauman, Carley Grimes, Jacqui Webster, Michelle Gooley, Mike Daube,
Gary Sacks, Stephen Colagiuri, Philip Batterham, Andrew Knight, Lyn Roberts,
Johnathan Malo, Bruce Bolam, Sharleen O'Reilly, Anna Peeters, Hazel
Fetherston & James Dunbar



About us

The Mitchell Institute for Education and Health Policy at Victoria University is one of the country's leading education and health policy think tanks and trusted thought leaders. Our focus is on improving our education and health systems so more Australians can engage with and benefit from these services, supporting a healthier, fairer and more productive society.

The Australian Health Policy Collaboration is led by the Mitchell Institute at Victoria University and brings together leading health organisations and chronic disease experts to translate rigorous research into good policy. The national collaboration has developed health targets and indicators for preventable chronic diseases designed to contribute to reducing the health impacts of chronic conditions on the Australian population.

Acknowledgements

The Australian Health Policy Collaboration at the Mitchell Institute sincerely thanks all members of the working groups who contributed to this report. Associate Professor John Glover and the Public Health and Development Unit (PHIDU) at Torrens University, Adelaide provided data analysis and support. The assistance of staff from the Australian Bureau of Statistics and Australian Institute of Health and Welfare in responding to technical queries regarding indicators for the first version is also gratefully acknowledged.

This work is supported by funding from the Australian Government Department of Health and Victoria University.

Suggested Citation

McNamara K, Livingston M, Kypri K, Maple JL, Bauman A, Grimes C, Webster J, Gooley M, Daube M, Sacks G, Colagiuri S, Batterham P, Roberts L, Malo J, Bolam B, O'Reilly S, Peeters A, Fetherston H, Dunbar JA. (2019), Targets and indicators for chronic disease prevention in Australia, Australian Health Policy Collaboration technical paper No. 2019-01, Mitchell Institute, Melbourne.

ISBN: 978-0-6482621-8-3

Foreword

The aim of the Australian Health Policy Collaboration (AHPC) is to contribute to a whole of population approach in policies, funding, institutional arrangements and service models to better prevent and manage chronic diseases in Australia. AHPC works to improve health outcomes through evidence-based research, particularly for socioeconomically disadvantaged Australians.

Since the release of the original 2015 *Targets and Indicators for Chronic Disease Prevention in Australia* report, the AHPC has established a national collaboration of public health and chronic disease organisations and experts. Together with the national collaboration and through the work of seven working groups presented in this report, the AHPC has produced a range of policy documents:

- **Australia's Health Tracker**, Australia's first comprehensive assessment of how Australia's population is faring when measured against the health targets agreed on by the collaboration that would improve the health of Australians by 2025;
- **Getting Australia's Health on Track**, 10 priority policy actions that, together, will help get Australia on track to reach the 2025 targets;
- **Australia's Health Tracker by Area**, an interactive website that provides the most up-to-date data on chronic diseases, conditions and their risk factors;
- Several national implementation proposals from *Getting Australia's Health on Track*:
 - **Heart Health: the first step to getting Australia's health on Track**, a national implementation proposal for Absolute Cardiovascular Risk Assessment and secondary prevention for cardiovascular health
 - **Active travel: pathways to a healthy future**, a national implementation proposal proposed for active school travel (walking, cycling or scooting to and from school);
 - **Better Data for Better Decisions**, a national implementation proposal for an ongoing commitment to the Australian Health Survey
- **Australia's Health Tracker by Socio-Economic Status**, a national report card on chronic diseases and their risk factors in the population by socio-economic status;
- **Australia's Oral Health Tracker**, a world-first national report card on preventable oral diseases and their risk factors; and
- **Australia's Mental and Physical Health Tracker**, an Australia-first study and report card which quantifies the risks of physical health conditions contributing to a wide range of mental health conditions.

We know that the achievements of the national collaboration have contributed to a shift in the policy debate at all levels of government. This work is now partially funded by the Australian Government Department and Health and we continue to invite federal, state and local governments, health organisations and service providers to engage with and benefit from the consolidated knowledge, expertise and commitment of a substantial coalition of experts who aim to support governments and policymakers to improve the range of options, policies and investments which will reduce preventable chronic disease in our communities.

This updated report builds upon the extensive work of the national collaboration and provides the latest data and commentary on Australia's efforts to reach the 2025 health targets.

Finally, we acknowledge and thank all who have committed their time and knowledge voluntarily to this work over the last five years. Their valuable input has not only laid the foundations of this important work but also builds the momentum for change and new action on chronic diseases and their risk factors.

Professor Rosemary Calder

Director, Australian Health Policy Collaboration

Contents

About us	i
Acknowledgements	i
Suggested Citation	i
Foreword.....	ii
List of Abbreviations	viii
List of Figures.....	ix
List of Tables.....	x
1. Introduction	1
1.1 Process	2
1.2 2018-19 revision process.....	4
1.3 Overarching themes	4
Equity	5
Health surveillance	5
Clinical data collection and linkage	6
Implementation.....	6
1.3 Proposed targets and indicators	7
References.....	8
2. Mortality and morbidity, and high-risk populations	15
2.1 Key findings.....	15
2.2 Introduction.....	16
2.3 Relevance of WHO targets	17
2.4 Proposed Australian target and indicators and feasibility	18
2.5 Discussion	24
Provide quality improvement support to primary care	24
Ensure the necessary IT infrastructure and support software	24
Introduce levers to drive appropriate health professional behaviours.....	25

Implement systems for sharing patient information and develop patient registers for key NCDs	25
Engage communities, including all relevant health and social care professionals	26
Key data sources and references	27
3. Alcohol	29
3.1 Key findings.....	29
3.2 Introduction.....	30
Divergent trends	30
Policy and economic conditions.....	31
Data sources	31
3.3 Relevance of WHO targets	31
3.4 Proposed Australian target and indicators and feasibility	32
3.5 Discussion	33
Pricing	33
Physical availability.....	33
Promotion.....	33
Population groups of concern	34
Treatment for alcohol use disorder	34
Better data.....	34
References.....	35
4. Physical inactivity	39
4.1 Key findings.....	40
4.2 Introduction.....	41
4.3 Relevance of WHO targets	42
4.4 Proposed Australian target and indicators and feasibility	42
4.5 Discussion	44
Active children and schools	44
Active workers and workplaces.....	44
Active older people and aged care	45
Active transport	45
Active cities and communities.....	45

Active health care	46
Public education and campaigns	46
4.6 Acknowledgement	46
References	47
5. Salt	48
5.1 Key findings	48
5.2 Introduction	49
5.3 Salt intake in Australia	50
5.4 Policy initiatives to reduce salt intake of Australians	51
5.5 Proposed Australian target, indicators and feasibility	52
5.6 Discussion	53
References	55
6. Tobacco	57
6.1 Key findings	57
6.2 Introduction	58
6.3 Relevance of WHO targets	59
6.4 Proposed Australian target and indicators and feasibility	59
6.5 Discussion	62
6.6 Key data sources	65
References	66
7. Diabetes and obesity	81
7.1 Key findings	81
7.2 Current rates of obesity in Australia	82
7.3 Prevalence of diabetes	83
7.4 Equity of risk	84
7.5 Proposed Australian targets and indicators and their assessment	84
7.6 Policy initiatives to address obesity and diabetes rates in Australians	85
7.7 Discussion	86
References	86
8. Mental Health	90

8.1 Key findings.....	90
8.2 Introduction.....	91
Suicide and suicide prevention	91
Surveillance of population mental health	92
Service coverage.....	93
8.3 Relevance of WHO targets	93
8.4 Proposed Australian target and indicators and feasibility	95
8.5 Discussion	96
Key data sources and references	98
9. Conclusion	101
Appendix one: working group members	102
Working Group 1 – Mortality, morbidity and high-risk populations.....	102
Working Group 2 – Alcohol.....	103
Working Group 3 - Physical Inactivity	104
Working Group 4 – Salt	105
Working Group 5 – Tobacco.....	105
Working group 6 – Obesity and diabetes.....	106
Working group 7 – Mental Health	107

List of Abbreviations

ABS	Australian Bureau of Statistics
ASSAD	Australian School Students Alcohol and Drug Survey
AHS	Australian Health Survey
APCC	Australian Primary Care Collaboratives
ATSI	Aboriginal and Torres Strait Islander
BMI	Body mass index
COAG	Council of Australian Governments
COPD	chronic obstructive pulmonary disease
CRESP	Centre of Research Excellence in Suicide Prevention
CVD	cardiovascular disease(s)
GP	general practitioner
HILDA	Household Income and Labour Dynamics in Australia
HPV	Human Papillomavirus Virus
IOTF	International Obesity Taskforce
NAIP	National Alcohol Indicators Project
NATSIHS	National Aboriginal and Torres Strait Islander Health Survey
NBCSP	National Bowel Cancer Screening Program
NCD	Noncommunicable Disease
NDSHS	National Drug Strategy Household Survey
NHS	National Health Survey
NMHC	National Mental Health Commission
NMHPSC	National Mental Health Plan Measurement Strategy
NPHS	National Preventive Health Strategy
NPHT	National Preventative Health Taskforce
NSMHWB	National Survey of Mental Health and Wellbeing
NTS	National Tobacco Strategy
SES	socioeconomic status
WHO	World Health Organization

List of Figures

3.1a: Prevalence of monthly risky episodic drinking among Australians aged 15 years and over by gender, 2001-2013	30
3.1b: Alcohol-related Emergency Department presentations per 1,000 persons, aged 15 years and older, by gender, 2005-06 – 2011-12 (all states excluding Tasmania)	30
4.1: Prevalence of sufficient physical activity from state- and territory-based surveys in Australia, 2001 to 2013	41
4.2: Physical activity trends in Western Australia, 1999 to 2009	43
5.1: Sources of salt in the Australian diet	49
5.2: Trend in daily salt intake among men and women aged 18 years and over determined via 24-hour urine collections	52
5.3: Baseline assessment of salt intake using data from men and women aged 25 to 78 years within the Victorian Health Monitor survey (2011) and the equivalent salt intake to be achieved by 2025	53
6.1: Prevalence of daily smoking among Australians aged 14 years and above with linear trend indicated	60
6.2: Prevalence of daily smoking amongst Australian children and adolescents aged 12–17 years and above, with linear trend indicated	60
7.1: Prevalence of overweight/obesity in Australian adults, aged 18 years and over	82
7.2: Prevalence of overweight/obesity in Australian children aged 5–17	83
7.3: Prevalence of self-reported diabetes, age 18 years and over	84
8.1: Average annual suicide rates per 100,000 population by five-year period	92

List of Tables

1.1: WHO targets and AHPC working groups	3
1.2: Targets and indicators proposed for implementation in Australia	9
1.3: Additional targets and indicators proposed for implementation in Australia	13
2.1: WHO morbidity target and indicator	15
2.2: Proposed Australian targets and indicators for reduction of premature mortality in noncommunicable disease	19
2.3: Proposed Australian targets and indicators for reduction of premature mortality in noncommunicable disease (not currently available)	21
2.4: Proposed health service delivery sub-indicators to achieve health targets	22
3.1: WHO alcohol target and indicators	29
3.2: Indicators for monitoring Australia's progress in reducing the harmful use of alcohol	32
4.1: WHO physical inactivity target and indicators	39
4.2: Physical activity guidelines and recommendations in Australia (Australian Government Department of Health 2014)	39
4.3: Prevalence of insufficiently active persons in Australia 2011/12 and corresponding WHO targets by age group	42
5.1: WHO salt target and indicator	48
6.1: WHO tobacco target and indicators	57
7.1: WHO diabetes and obesity target and indicators	62
8.1: Selected WHO mental health targets and indicators	81
8.2: Proposed Australian mental health targets and indicators	90

1. Introduction

More than one-third of chronic diseases can be prevented by addressing common risk factors for poor health – poor nutrition, physical inactivity, smoking and risky alcohol consumption. It is estimated one in two Australians are now living with a chronic disease, with high-risk populations such as people living with a mental health condition and communities of low socio-economic status much more likely to have multiple chronic diseases.

In 2015, the Australian Health Policy Collaboration was established to support a national collaboration of over 70 of Australia's leading health experts, clinicians, researchers and policymakers that has developed a national monitoring and accountability framework for chronic diseases in Australia to reduce the burden of preventable disease on our nation.

This work was underpinned by the World Health Organization's (WHO) *Global Action Plan for the Prevention and Control of Noncommunicable Diseases 2013-2020* (World Health Organization, 2013a) and *WHO Mental Health Action Plan 2013-2020* (World Health Organization, 2013b). The Australian targets and indicators are consistent with the WHO Global Action Plan with the exception of the inclusion of mental health. The experts agreed that the inclusion of a stand-alone mental health target was important to recognise the growing burden of poor mental health on individuals, families and the economy.

The experts and national collaboration proposed that the targets and indicators be reviewed and updated every two years to guide and track progress towards a substantial change in the health of Australia.

The 2019 *Targets and indicators for chronic disease prevention in Australia* report is the first progress report and includes (where relevant):

1. New data and trends
2. New research and evidence
3. Updated commentary and discussion

Compiled by Australia's experts (full membership listed in Appendix I), the 2019 report supersedes and replaces the original *Targets and indicators* report (2015) to provide the most up-to-date and comprehensive accountability and monitoring framework of chronic disease in Australia.

Australia remains behind most other advanced countries in the health information it regularly collects and uses in health policy and planning. As highlighted in the *Better Data for Better Decisions* report (Calder et al., 2018), "effective health services planning and management depends on comprehensive health information about the health of people".

The AHPC and the national collaboration provides this report to further the policy debate and support policy leaders and influencers in the challenge of preventing and reducing the impact of chronic diseases and their risk factors on individuals and communities, as well as the health system. The next edition of the targets and indicators report is scheduled for publication in 2021.

1.1 Process

In 2015, the AHPC supported seven working groups to review the suitability of the WHO 25x25 targets and indicators for Australia. In contrast to the WHO approach, this work included mental health, in recognition that mental health is a significant area of chronic disease affecting a substantial proportion of the Australian population (Table 1.1).

The purpose of the working groups was to tailor or develop chronic disease targets and indicators for Australia consistent with their subject area/topic (for example, salt or obesity). Six of the groups drew on the *Global Action Plan*, and the mental health group drew on the *WHO Mental Health Action Plan 2013-2020* global targets and indicators. The working groups utilised relevant national policy documents, and consulted and collaborated with key stakeholders in health, including non-government organisations, academics, implementers, and policymakers.

Groups worked to a common set of terms of reference. These included criteria for selecting indicators, namely that chronic disease indicators must:

- be relevant¹;
- be applicable across population groups;
- be technically sound (valid, reliable, sensitive (to change over time) and robust);
- be feasible to collect and report;
- lead to action (at various population levels, for example, individual, community, organisation/agency);
- be timely²; and
- be marketable (Australian Institute of Health and Welfare, 2011).

The groups met between September and November 2015, and each had a designated chair and a rapporteur. Members of the working groups gave significant time and expertise to this work and AHPC gratefully acknowledges the contribution and leadership of all members of the working groups. Membership of the groups is listed in Appendix One.

This report presents a consensus of Australia's leading experts on the measures that are most important to policy, investments and practices to improve the health and health prospects of the population. It provides policy makers and practitioners, communities and organisations, with advice about the significant risk factors for poor health for individuals and communities that can and need to be reduced by concerted effort and focus.

¹ The indicator covers an area or subject of key importance in terms of: the impact on health outcomes, and/or a significant area of health system policy focus. Reporting against this indicator is likely to help decision-makers identify opportunities for improvement. Adapted from COAG (2011).

² Timely measures have information available frequently enough, and with sufficient currency, to have value in making decisions.

Table 1.1: WHO targets and AHPC working groups

Area	Target	Working group
Mortality and morbidity		
Mortality and morbidity; high risk populations	1. A 25% relative reduction in the overall mortality from cardiovascular diseases, cancer, diabetes, or chronic respiratory diseases	Group 1 plus high risk aspects of targets 6, 7, and 8 (hypertension; high risk of diabetes; drug therapy and counselling for myocardial infarction and stroke)
Behavioural risk factors		
Alcohol	2. At least 10% relative reduction in the harmful use of alcohol, as appropriate, within the national context	Group 2
Physical inactivity	3. A 10% relative reduction in prevalence of insufficient physical activity	Group 3
Salt	4. A 30% relative reduction in mean population intake of salt/sodium	Group 4
Tobacco	5. A 30% relative reduction in prevalence of current tobacco use in persons aged 15+ years	Group 5
Biological risk factors		
Hypertension	6. A 25% relative reduction in the prevalence of raised blood pressure or contain the prevalence of raised blood pressure, according to national circumstances	No specific group (group 1 for high risk considered)
Diabetes and obesity	7. Halt the rise in diabetes & obesity	Group 6
National system response		
National systems/ equity	8. At least 50% of eligible people receive drug therapy and counselling (including glycaemic control) to prevent heart attacks and strokes	No specific group (considered by relevant groups)
	9. An 80% availability of the affordable basic technologies and essential medicines, including generics, required to treat major NCDs in both public and private facilities	No specific group (considered by relevant groups)
Mental health		
Mental health	10. An appropriate target, preferably linked to WHO targets for mental health within the <i>Mental Health Action Plan 2013-2020</i>	Group 7
	11. Other possible targets	All groups

1.2 2018-19 revision process

The AHPC reconvened the expert working groups in early 2018 to consider the relevant targets and indicators and to either affirm or propose review. The purpose of the meetings of the working groups was to identify and provide:

- new data or trends;
- new research and evidence; and
- updated information and commentary

The rapporteurs of each working group used the original (2015) chapter to update information where relevant. The updated report maintains the same style and format as the original document. The revision process occurred between February and December 2018.

1.3 Overarching themes

The working groups have identified three overarching themes to inform policy work for the prevention of chronic disease in Australia – the importance of place as a determinant for health outcomes; the importance of socioeconomic and other demographic factors; and the paucity of health surveillance in Australia.

Health surveillance has once again been identified as an overarching theme by the working groups as a critical component to the health of our nation. Together with a coalition of Australia's experts and around 60 high-profile supporting organisations, the AHPC continues to advocate for [better health surveillance](#).

Place

Where you live matters for health outcomes. Through *Australia's Health Tracker by Area* (Australian Health Policy Collaboration, 2016), the data clearly shows the health disparities by postcode. Prosperous postcodes – those with access to commodities such as parks and green spaces, adequate public transportation and housing – are much more likely to have good health compared to those with no or limited access to these commodities (Woolf et al., 2015).

Demographic differences

There are certain characteristics that predispose individuals to better or poorer health outcomes. Key among these is socioeconomic status. *Australia's Health Tracker by Socioeconomic Status* highlights the divide between the wealthiest in the community and the most disadvantaged in both risk factors and health outcomes (Harris et al., 2017). *Australia's Mental and Physical Health Tracker* demonstrates the poorer physical health of those with anxiety, depression and other mental health conditions (Harris et al., 2018). Aboriginal and Torres Strait Islander Australians also have consistently poorer health outcomes than the rest of the community (Holland, 2018). Other demographic factors, such as sex, age, education and family structure can also affect health.

Equity

Many indicators of chronic disease can be analysed by selected population characteristics, such as SES or location. The working groups supported consideration of equity through sub-indicators that examine ATSI status, SES, geographic location, and where possible, mental illness.

The *Australia's Health Tracker by Socio-Economic Status* highlights the disproportionate effect of chronic diseases and risk factors on disadvantage groups. Ten million Australians – people and families in the lower two socio-economic quintiles – are at much greater risk of poor health (Harris et al., 2017).

Failure to tackle the health of Australians affected by disadvantage will result in rising costs and burden on health services, widening existing health disparities and consequential high, and rising, rates of hospital admission for preventable causes.

The *Australia's Mental and Physical Health Tracker*, for the first time, quantifies the risks of physical health conditions contributing to a wide range of mental health conditions including anxiety and depression. This report highlights that while one in two Australians live with a chronic condition, three in four people with a mental health condition live with a second, third or fourth chronic disease (Harris et al., 2018).

The bidirectional relationship between mental and physical health has been known for a long time. The combined effects of poor physical health and mental health conditions affect welfare and education, health services and costs, productivity, employment and social participation. We must improve the physical health of people living with mental health conditions, and vice versa.

Disadvantaged groups may require tailored interventions (such as smoking cessation programs for people with mental illness). Without such interventions, inequity can be exacerbated. For example, while the prevalence of current smokers in Australia has decreased over time, the disparity between the highest and lowest quintiles of SES has increased (Leung & Tolhurst, 2015).

Health surveillance

Accurate monitoring of chronic diseases and related risk factors requires a national commitment to regular collection of risk factor data for chronic diseases (including anthropometric, biomedical and environmental measures). The Australian Health Survey (AHS) carried out in 2011/12 provided a baseline for more comprehensive health surveillance than has previously been available nationally, and instituting this survey at five-yearly intervals was strongly supported by the working groups. Regular surveillance is needed to assess changes over time, and to provide current information about health needs and risk factors that can target interventions accurately. For more discussion on this topic, please see the AHPC report *Better Data for Better Decisions* (Calder et al., 2018).

The AHS expanded the traditional National Health Survey (NHS) and National Aboriginal and Torres Strait Islander Health Survey (NATSIHS) to collect information on physical activity and nutrition behaviours, anthropometric and biomedical measures of nutrition status and chronic disease risk in the general and Aboriginal and Torres Strait Islander (ATSI) populations. The 2011-13 AHS was the first survey since 1995 to gather information about the nutritional status of Australians.

More broadly, improved data collection about risk factors would assist assessment of progress. Collection of alcohol sales data, for example, is mandatory in WA and NT. National collection of this data would substantially improve surveillance and the capacity to assess effects of policy changes.

In some areas, further development of indicators or improved regular data collection is needed. Another example is salt, where data collection could be improved through establishment of collections of 24 hour urine samples through a regular interval sample survey.

Clinical data collection and linkage

Improved prevention and management of chronic diseases would be aided by improved data collection and linkage, both in primary care and more broadly. Primary care has an important role in assessing, preventing and managing chronic diseases and associated risk factors. Data, including patient health outcomes data, need to be collected and used to continually improve primary health care. This is important not just to measure national progress against targets, but also to assist with quality improvement at a local level.

Performance data should be regularly fed back to clinicians, providing both a motivational tool and an educational tool to demonstrate the efficacy of their efforts. A uniform approach to the collection of clinical outcomes in general practice to improve patient care is a national priority.

Implementation

In May 2017, the Australian Department of Health released the National Strategic Framework for Chronic Conditions (the Framework). The Framework supersedes the National Chronic Disease Strategy 2005 and associated National Service Improvement Framework.

The National Strategic Framework for Chronic Conditions aims to “provide guidance for development and implementation of policies, strategies, actions and services to address chronic conditions and improve health outcomes” (Australian Health Ministers’ Advisory Council, 2017).

The National Strategic Framework for Chronic Conditions sets out three objectives:

- Objective 1: Focus on prevention for a healthier Australia
- Objective 2: Provide efficient, effective and appropriate care to support people with chronic conditions to optimise quality of life
- Objective 3: Target priority populations

Within Objective 1, success includes, “Australia meets the voluntary global targets outlined in the *WHO Action Plan for the Prevention and Control of Noncommunicable Diseases 2013-2020*” (pg. 17). Furthermore, the Framework explicitly states that, “Australia should, where possible, align with Australia’s international reporting requirements for the *WHO Global Action Plan for the Prevention and Control of Noncommunicable Diseases 2013-2020*” (pg. 51).

The AHPC commends the focus on prevention in the National Framework for Chronic Condition, and recommends the targets and indicators provided in this report as the essential measures to support implementation of that framework in policy, activity and investments. Uptake of these targets and indicators as measures in all relevant health policies and strategies will contribute significantly to improved population health.

1.3 Proposed targets and indicators

The seven working groups proposed targets and indicators for their subjects. In some cases, the WHO target and indicators were adopted; in others, the WHO approach was amended or extended.

The full set of targets and indicators that are proposed for implementation in Australia now are listed in Table 1.2. The working groups supported the development of additional targets or indicators as per Table 1.3. Many of the indicators in Table 1.3 are not currently feasible to collect and report nationally, and further development would be required to implement them.

References

- Australian Health Ministers' Advisory Council. (2017). *National Strategic Framework for Chronic Conditions*. Canberra Retrieved from [http://www.health.gov.au/internet/main/publishing.nsf/content/A0F1B6D61796CF3DCA257E4D001AD4C4/\\$File/National%20Strategic%20Framework%20for%20Chronic%20Conditions.pdf](http://www.health.gov.au/internet/main/publishing.nsf/content/A0F1B6D61796CF3DCA257E4D001AD4C4/$File/National%20Strategic%20Framework%20for%20Chronic%20Conditions.pdf).
- Australian Health Policy Collaboration. (2016). *Australia's Health Tracker by Area*. Retrieved from <http://www.atlasesaustralia.com.au/ahpc/>
- Australian Institute of Health and Welfare. (2011). *Key indicators of progress for chronic disease and associated determinants: data report, cat. no. PHE 142*. Canberra, AIHW
- Calder, R., Glover, J., Buckely, J., McNeil, J., & Harris, B. (2018). *Better Data for Better Decisions*. Melbourne, Australian Health Policy Collaboration
- Harris, B., Duggan, M., Batterham, P., Bartlem, K., Clinton-Mcharg, T., Dunbar, J., et al. (2018). *Australia's Mental and Physical Health Tracker* Melbourne, Australian Health Policy Collaboration, Victoria University
- Harris, B., Fetherston, H., & Calder, R. (2017). *Australia's Health Tracker by Socio-Economic Status 2017*. Melbourne, Australian Health Policy Collaboration, Victoria University
- Holland, C. (2018). *A ten year review: the Closing the Gap Strategy and Recommendations for Reset*, Close the Gap Campaign
- Leung, J., & Tolhurst, P. (2015). *Suitability of the WHO 25 x 25 Chronic Disease Targets and Indicators for Australia*. Melbourne, The Australian Health Policy Collaboration, Victoria University
- Woolf, S. H., Aron, L., Dubay, L., Simon, S. M., Zimmerman, E., & Lux, K. X. (2015). *How are income and wealth linked to health and longevity*, Urban Institute, Centre on Society and Health
- World Health Organization. (2013a). *Global action plan for the prevention and control of noncommunicable diseases 2013-2020*. Geneva, Switzerland,
- World Health Organization. (2013b). *Mental Health Action Plan 2013-2020*. Geneva, WHO

Table 1.2: Targets and indicators proposed for implementation in Australia

Framework Element	Proposed Australian target	Proposed Australian indicators
Mortality and morbidity		
Premature mortality from noncommunicable disease	1. 25% reduction in the overall mortality from cardiovascular diseases, cancer, chronic respiratory diseases and diabetes	<ul style="list-style-type: none"> • Unconditional probability of dying between ages of 30 and 70 years from cardiovascular diseases, cancer, diabetes, or chronic respiratory diseases • Age-standardised rates of unplanned admission for patients aged between 30 and 70 years admitted to hospital with a primary diagnosis of cardiovascular diseases, cancer, diabetes, or chronic respiratory diseases • Age-standardised rates of unplanned readmission for patients aged between 30 and 70 years admitted to hospital with an initial primary diagnosis of cardiovascular diseases, cancer, diabetes, or chronic respiratory diseases
	a. 25% reduction in the overall mortality from cardiovascular diseases and diabetes	<ul style="list-style-type: none"> • Unconditional probability of dying between ages of 30 and 70 from cardiovascular diseases • Unconditional probability of dying between ages of 30 and 70 from diabetes • Age-standardised average blood pressure among patients with chronic kidney disease, and percent of adults aged 18 years or more with elevated blood pressure ($\geq 140/90$ mmHg)
	b. 25% reduction in the overall mortality from chronic respiratory diseases c. Elimination of asthma deaths in adults aged under 65 years	<ul style="list-style-type: none"> • Unconditional probability of dying between ages of 30 and 70 from chronic obstructive pulmonary disease • Unconditional probability of dying between ages of 30 and 70 from asthma • Percent of patients aged 30-70 years who are readmitted within 28 days of discharge following a hospital admission related to asthma or COPD
	d. 25% reduction in the overall mortality from cancer	<ul style="list-style-type: none"> • Unconditional probability of dying between ages of 30 and 70 from cancer • One-year survival rates for individuals diagnosed with the following cancers (individual indicators): lung, breast, colorectal, cervix, melanoma and prostate

	e. Reduction in the national suicide rate by 10% by 2020 ³	<ul style="list-style-type: none"> The suicide rate as an age-standardised rate per 100,000 population
--	-----------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------

Behavioural risk factors

Harmful use of alcohol	<p>2. At least 20% relative reduction in the harmful use of alcohol, with regard to:</p> <ul style="list-style-type: none"> Per capita consumption Heavy episodic drinking Alcohol-related morbidity and mortality 	<ul style="list-style-type: none"> Apparent consumption of pure alcohol per capita (aged 15+), based on excise data, import clearances and sales data from Australian produced wine. Heavy episodic drinking: Proportion of the population (aged 15+) reporting monthly or more frequent episodes of drinking where 5 or more standard drinks were consumed in a single occasion Heavy episodic drinking among adolescents: Proportion of the adolescent (12-17 yo) population reporting at least one drinking occasion where 5 or more standard drinks were consumed in the previous week. Long-term risky drinking: Proportion of the population (aged 15+) reporting average alcohol consumption of more than two standard drinks per day over the past year. (gender split) Emergency department presentations: Presentations for injury (S & T ICD-10 codes) to Australian Emergency Departments (excluding Tasmania) at any of the following times: Fridays, 22:00 to 23:59; Saturdays, 0:00 to 3:59; 22:00 to 23:59; Sundays, 0:00 to 3:59 and 18:00 to 23:59). Rate per 100,000 population. (gender and age (<30, 30+)) Hospital admissions for alcohol use disorders: Hospital admissions with primary diagnoses of ICD-9-CM codes; 291.0-291.9, 303.0-303.9, 305.0 and ICD-10-AM codes; F10.0-F10.9. Rate per 100,000 population. (gender split) Alcoholic liver disease deaths: Mortality rates with primary cause of alcoholic liver cirrhosis (ICD-9-CM codes: 571.0, 571.1, 571.2, 571.3 ICD-10-AM codes: K70.0, K70.1, K70.2, K70.3, K70.4 and K70.9) (gender split)
Physical inactivity	<p>3. A 10% relative reduction in prevalence of insufficient physical activity</p>	<ul style="list-style-type: none"> Prevalence of insufficiently physically active children and adolescents aged 5–17 years defined as less than 60 minutes of activity daily <p>Prevalence of insufficiently physically active adults aged 18+ is based on a physical activity recommendation of 150 minutes from five or more sessions per week. (Updated guidelines have removed the sessions requirement and thus the baseline prevalence and WHO target will need to be updated according to estimates based on the new guidelines.)</p>

³ WHO set targets and indicators relevant to mental health in the *WHO Global Mental Health Action Plan 2013-2020*, which contains six global targets and indicators for achievement by 2020

Salt/sodium intake	4. A 30% relative reduction in mean population intake of salt/sodium	<ul style="list-style-type: none"> Age-standardised mean population intake of sodium expressed as salt grams per day
Tobacco use	5. A 30% relative reduction in prevalence of current tobacco use in persons aged 14+ years	<ul style="list-style-type: none"> Adults: Age-standardised prevalence of daily smokers aged 14 years and older from National Drug Strategy Household Survey (NDSHS) (also group 1) Adolescents: daily smoking prevalence (in the seven days prior to the survey) for adolescents aged 12–17 years
	5 b Reduce smoking rates of adults over 18 years with a mental illness by 30% by 2020 and 60% by 2025	<ul style="list-style-type: none"> The proportion of the population with mental illness who report being smokers compared with the smoking rates for the population without mental illness

Biological risk factors

Raised Pressure	blood	6. A 25% relative reduction in the prevalence of raised blood pressure	<ul style="list-style-type: none"> Age-standardised average blood pressure and percent of adults aged 18 years or more with elevated blood pressure ($\geq 140/90$ mmHg) (also group 1)
Diabetes obesity	and	7. Reverse the rise in obesity	<ul style="list-style-type: none"> Age-standardised prevalence of normal weight, overweight and obesity class I, II, III in persons 18 years or older (also group 1) Prevalence of normal weight, overweight and obesity in children and adolescents (also group 1) Age-standardised proportion of total energy intake from discretionary foods in persons aged 18 years or older and in children (2–17 years) Prevalence of breastfeeding and exclusive breastfeeding
		8. Reverse the rise in new diabetes	<ul style="list-style-type: none"> Age-standardised incidence and prevalence of diabetes in persons 25–65yrs Use of HbA1c $\geq 6.5\%$ in addition to fasting blood glucose <7.0 mm/L or taking blood glucose lowering medications as a tool for the early diagnosis of type 2 diabetes

Additional indicators

			<ul style="list-style-type: none"> Age-standardised average total cholesterol levels for adults aged 18 years or more, and percent with total cholesterol ≥ 5.0 mmol/L
--	--	--	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Mental ill-health	9. Improve employment rates of adults over 18 with mental illness, and participation rates of young people with mental illness in education and employment, halving the employment and education gap by 2025	<ul style="list-style-type: none"> • Participation rates by people with mental illness of working age in employment: general population • Participation rates by young people aged 16-30 with mental illness in education and employment: General population
--------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Note: indicators in bold were regarded as core by the morbidity and mortality working group

Table 1.3: Additional targets and indicators proposed for development and implementation in Australia

Area	Proposed Australian target	Future indicator
Cardiovascular disease and diabetes	25% reduction in the overall mortality from cardiovascular diseases and diabetes	<ul style="list-style-type: none"> • Percent of adults aged 45–74 years, (or 30–74 years for ATSI people) assessed as having high, moderate or low levels of overall CVD risk, based on the Australian 5-year score • Percent of adults aged 45–74 years, (or 30–74 years for ATSI people) with a 5-year risk of a cardiovascular event of 15% or more, including those with established CVD, being treated with both antihypertensive and lipid-lowering medicines (and for glycaemic control if relevant) • Age-adjusted survival rates at 12 months after an acute coronary event
Cancer	25% reduction in the overall mortality from cancer	<ul style="list-style-type: none"> • Disease staging at diagnosis for the following cancers (individual indicators): lung, breast, colorectal, cervix, melanoma and prostate
Alcohol	20% relative reduction in the harmful use of alcohol, with regard to: <ul style="list-style-type: none"> • Per capita consumption • Heavy episodic drinking • Alcohol-related morbidity and mortality 	<ul style="list-style-type: none"> • Indicators as per table 1.2
Physical inactivity	A 10% relative reduction in prevalence of insufficient physical activity	<ul style="list-style-type: none"> • Presence of a national physical activity plan • Existence of an adequate surveillance system to monitor and track physical inactivity levels • Presence of national guidelines to improve physical activity across the lifespan and in a range of settings such as schools, workplaces and communities • Existence of a coordinated mechanism (task force, coalition) to address physical inactivity • Strength training recommendations for adults and older Australians • Prevalence of children meeting screen-based activity recommendations

		<ul style="list-style-type: none"> • Prevalence of adults meeting recommendations related to daily sitting time, according to future evidence-based guidelines in this area
Mental health	Reduction in the national suicide rate	<ul style="list-style-type: none"> • Rates of self-harm (admissions and presentations)
	Improve employment rates of adults over 18 with mental illness, and participation rates of young people with mental illness in education and employment	<ul style="list-style-type: none"> • Proportion of state and territory mental health consumers aged 16–64 years who are employed (as defined by standard ABS definition) • Proportion of state and territory mental health consumers aged 16–30 years who are employed (as defined by standard ABS definition) and/or are enrolled for study in a formal secondary or tertiary qualification
	Improve the physical health of people with mental illness and reduce the life expectancy gap	<ul style="list-style-type: none"> • Excess under 75 mortality rate in adults with serious mental illness

2. Mortality and morbidity, and high-risk populations

Kevin McNamara

Original authors: Kevin McNamara and Andrew Knight

Since 2015, we have:

Produced a national implementation strategy, [Heart Health: the first step to getting Australia's health on track](#). The Australian Government announced a new dedicated MBS item for heart health checks in February 2019.

The key WHO target and indicator for reducing mortality are listed below in Table 2.1. This report has been produced as part of a project to tailor or develop NCD targets and indicators for Australia that align with the WHO's *Global Action Plan for the Prevention and Control of NCDs 2013–2020*. This Working Group focused on indicators for reducing premature mortality from NCDs and mechanisms for achieving the target.

Table 2.1: WHO morbidity target and indicator

Framework Element	Target	Indicator
Mortality and morbidity		
Premature mortality from noncommunicable disease	A 25% relative reduction in the overall mortality from cardiovascular diseases, cancer, diabetes, or chronic respiratory diseases	Unconditional probability of dying between ages of 30 and 70 from cardiovascular diseases, cancer, diabetes or chronic respiratory diseases

2.1 Key findings

- Cardiovascular diseases and cancer are the two largest contributors to premature mortality in Australia.
- Rates of premature mortality from NCDs in Australia appear to be in long-term decline, and suggest that the overall target of a 25% relative reduction by 2025 may be met.
- Despite this, there are highly prevalent diseases and population subgroups for which the mortality reductions are likely to be inequitable or unacceptable without targeted intervention.
- Regular NCD surveillance to accurately monitor population health trends is lacking at a national level; an absence of patient registers or shared records, and poor data quality in general practice, make it difficult to assess quality of care.
- In addition to individual disease-focused initiatives, interventions are also required to improve systems for management of NCDs and data collection in primary care, and to improve care coordination.

2.2 Introduction

The Global Status Report on NCDs 2014 (World Health Organization, 2014) estimated that the probability of dying between the ages of 30 and 70 from cardiovascular diseases (CVD), cancer, diabetes or chronic respiratory diseases in Australia in 2012 was 9.4%, down from 9.9% in 2010 and continuing a trend of gradual decline spanning several decades. This overall figure hides variation in trajectories between diseases and between different population subgroups (Table 2.1). Key contributions to the mortality decline have come from cancer- and cardiovascular-related diseases, but these remain the two largest contributors to mortality (Australian Institute of Health and Welfare, 2015). Premature mortality from asthma is quite low relative to these, but the decline has plateaued for almost a decade, despite some other countries having virtually eliminated deaths in adults under 65 years. Trends for the key biomedical risk factors contributing to these outcomes also paint a mixed picture. Rates of tobacco use, elevated blood pressure and total cholesterol continue to decline and these trends seem set to continue. In contrast there is an alarming rise in the prevalence of obesity and diabetes, which threatens the continued decline achieved in mortality related to CVD. Reinvigorated efforts are needed to ensure that Australia remains a world leader in tobacco control.

Policy initiatives to address the impact of NCDs in Australia have focused on:

- direct patient interventions (eg. community screening and public awareness campaigns);
- support for general practice (eg. training provision, financial incentives for NCD prevention and management, quality improvement programs);
- health systems (eg. guideline development, funding of new healthcare models to improve access); and
- public health policy (legislation, taxation, research funding).

The overall impact of such policy initiatives is clear in certain areas. For example, Australia has had significant success at reducing rates of tobacco use through combined legislation to reduce tobacco advertising, increased taxation on tobacco, public awareness campaigns, funding of support programs for smoking cessation and smoke-free laws. The Australian Primary Care Collaboratives (APCC) have involved about 20% of Australian general practices and have delivered significant improvements to the quality of care for several key diseases including CVD, diabetes and chronic obstructive pulmonary disease (COPD) (Brown et al., 2014). By contrast, other initiatives such as general practice funding for CVD and diabetes risk assessments have disappointing levels of uptake.

In contrast to overall improvements in NCD outcomes, inequalities in health outcomes and service access remain high for key social groups such as ATSI communities, rural and remote communities, some migrant populations, those with mental illnesses and those from low-SES backgrounds.

Several areas of opportunity exist for the health system to improve performance and contribute towards further reducing mortality rates. Screening rates for bowel, breast and cervical cancer are suboptimal. Current efforts towards a national bowel cancer screening strategy and the introduction of new Human Papillomavirus Virus (HPV) vaccine strategies provide clear opportunities for improvement. Likewise, the experiences of countries such as Finland demonstrate that elimination of asthma mortality is feasible through early and intensive treatment of acute attacks with anti-inflammatory inhalers. Because treatment of COPD is largely palliative in its late stages, earlier identification and prevention through smoking

cessation have the greatest potential for mortality reduction. Analysis of data from the AHS suggests that 22% of all Australian adults – 3.7 million people – have one or more CVD (Australian Institute of Health and Welfare, 2014b). In 2011/12, an estimated 4.6 million adult Australians (32%) had hypertension; this includes 3.1 million with uncontrolled hypertension and 1.5 million whose blood pressure was controlled by medication (AIHW 2015). It is estimated that a minority of general practitioners (GPs) approach cardiovascular risk management based on absolute risk, as indicated by guidelines. The AusHEART study found entrenched evidence-practice gaps existed in primary and secondary prevention of CVD for older Australians (Heeley et al., 2010) A broad range of policy initiatives would enable replication of the success of local and international quality improvement programs.

Ensuring reliable population trend data will be one of the biggest challenges faced, both to monitor performance nationally against targets and to support local improvements to care. Various surveillance studies have been performed using different protocols over the past couple of decades to allow estimates of trends. The AHS (2011–13) was the most recent national survey to measure the prevalence of most key risk factors and NCDs of interest. Advice from the ABS indicates that they were unable to secure funding for the AHS and therefore it will not proceed in 2021-23. However, the ABS advised that there will still be another National Health Survey in 2020-21. Commitment to further biomedical surveillance is lacking nationally. General practice data is often used to measure quality of care, and for proxy measures of disease prevalence, but the quality of general practice data is generally inadequate and there is no national approach to the extraction and analysis of general practice data. An absence of patient registers has made it difficult to establish denominators for primary care monitoring. Alternative sources of primary care data are practices participating in the NPS Medicinewise Medicine Insight program (2132 GPs in 516 practices, with over 3.5 million patients) and the APCC. Practices participating in these programs are probably higher-performing than their peers and some data might be unrepresentative. Data quality is variable for key interventions around screening and immunisations. Where centralised data collection exists (eg. Australian Childhood Immunisation Register) strong improvements have been achieved and quality should be acceptable. In September 2016, the Australian Childhood Immunisation Register was expanded to become the ‘whole of life’ Australian Immunisation Register, to capture all vaccines given from birth to death, through General Practice and other vaccination providers (eg. community clinics and pharmacies). Other interventions (eg. bowel cancer screening) suffer from data fragmentation as a result of uncoordinated data collection where service delivery occurs in several settings. Mortality data collected by Births, Deaths and Marriage Registries for national aggregation are considered robust.

2.3 Relevance of WHO targets

The Working Group considered the overall WHO target of 25% reduction in mortality, and associated indicators, were largely appropriate and feasible for CVD, diabetes and cancer. However, the group felt that we should aim to exceed this goal as it relates to asthma, and work towards the elimination of premature deaths from asthma. With COPD, it is not considered feasible to achieve a 25% mortality reduction for those patients who are already at an advanced stage of the disease. Australian data for this condition was not considered robust relative to other countries. Age-standardised incidence rates (25–64 years) for diabetes were considered more appropriate indicators than prevalence, as improved care, which will increase detection and survival for patients with diabetes, will result in increased prevalence.

Some indicators may need adaptation for greater relevance to the Australian setting. Adult prevalence of elevated blood pressure ($\geq 140/90$ mmHg), elevated total cholesterol (≥ 5.0 mmol/L), and mean blood pressure/total cholesterol are appropriate indicators of population health, but treatment advised in Australian guidelines is advocated from an absolute cardiovascular risk perspective. Therefore estimates of mean absolute cardiovascular risk, and prevalence of low, medium and high-risk categories were considered more relevant for

practitioners. Assessment of five-year absolute cardiovascular risk, endorsed in Australia, would be more appropriate locally than the WHO-proposed 10-year risk score (National Vascular Disease Prevention Alliance, 2012). Australian guidelines recommend screening to commence at 45 years (for non-ATSI patients), slightly at odds with the 40 years proposed by WHO. Adapted indicators for individual risk factors could be collected in addition or as an alternative to the WHO-proposed indicators. Additional targets suggested by the Working Group involved measures of access to stroke care units, end-stage kidney disease treatments, and rehabilitation units for cardiac disease, stroke and chronic obstructive pulmonary disease. Of these additional process measures, only rehabilitation access indicators were considered appropriate as indicators for secondary prevention.

2.4 Proposed Australian target and indicators and feasibility

The Working Group chose indicators that directly relate to mortality outcomes (Table 2.2), biomedical risk factors that cause these outcomes (Table 2.2), and evidence-based interventions to modify these outcomes (Table 2.3). Final selection considered the feasibility of accurate data collection and the evidence for improved outcomes from health service interventions. Separate targets and indicators were chosen for each of the disease areas in recognition of varying trends in mortality (Table 2.2). Age-standardised prevalence of tobacco use is a valid indicator of progress across all major disease groups, and has been added to the overall indicators. Upper age limits are recommended for several targets and indicators, acknowledging the increased potential for multiple concurrent morbidities in individual patients to make mortality and hospitalisation data unreliable. To ensure that intervention efforts support a reduction in health inequalities, it is recommended that variation in all targets and indicators should be examined according to location (metro, rural and remote), socioeconomic strata, and ethnicity (particularly ATSI status). Readmission within 28 days following a hospital admission for the conditions of interest was also advocated for because of its utility as a marker of integration between primary, secondary and tertiary care, and quality of care during hospitalisation.

Cardiovascular disease and diabetes indicators are largely in keeping with the recommendations of WHO. Body mass index (BMI) and waist circumference are additionally endorsed as indicators of patient self-management that would be more feasible to collect than health behaviours. Survival at 12 months after an acute coronary syndrome is important as it is one of the key markers of health inequality between the ATSI population and the general Australian population.

Six common cancers were put forward as areas of focus: lung, breast, colorectal, cervix, melanoma and prostate. The specific list was developed based on incidence, mortality, state/national screening programs and prevention opportunities. Blood and ovarian cancers were omitted owing to the lack of effective screening options. Survival at one year following cancer diagnosis is as an accepted marker for early diagnosis, recognition by GPs, and timeliness of treatment. It is recommended for inclusion as a proxy indicator for quality of care. State and national data for one-year survival should be readily available. For lung cancer, tobacco control is the best prevention strategy. Screening of groups at high risk of lung cancer (eg. family members, heavy smokers) was rejected as an expensive option that may result in an unacceptably high number of false positive results. A recommendation from the original report to monitor cervical cancer screening rates over the past five years, remains under review and is likely to be modified once the impact of introducing a HPV vaccination program is assessed.

An Australian Centre for Asthma Monitoring (Australian Centre for Asthma Monitoring, 2009) report identified 10 feasible indicators for asthma, nine of which would directly impact on mortality (only prevalence would remain unchanged). A systematic review of effective interventions to reduce hospitalisations in asthma identified regular medication reviews, an asthma action plan, and patient self-management as useful (Gibson & Powell, 2004). National COPD indicators are only more recently developed, and the included outcome measures,

developed by the APCC's COPD Wave, may be more directly relevant to mortality. It was felt that the preventable nature of any asthma death in younger patients (<65 years) should merit any such death becoming a sentinel event for further investigation.

Table 2.2: Proposed Australian targets and indicators for reduction of premature mortality in noncommunicable disease³⁴

Area	Target	Indicator
Overall	25% reduction in the overall mortality from cardiovascular diseases, cancer, chronic respiratory diseases and diabetes	<ul style="list-style-type: none"> • Unconditional probability of dying between ages of 30 and 70 years from cardiovascular diseases, cancer, diabetes, or chronic respiratory diseases • Age-standardised rates of unplanned admission for patients aged between 30 and 70 years admitted to hospital with a primary diagnosis of cardiovascular diseases, cancer, diabetes, or chronic respiratory diseases • Age-standardised rates of unplanned readmission for patients aged between 30 and 70 years admitted to hospital with an initial primary diagnosis of cardiovascular diseases, cancer, diabetes, or chronic respiratory diseases
	30% relative reduction in prevalence of current tobacco use in persons aged 14+	<ul style="list-style-type: none"> • Age-standardised prevalence of daily smokers aged 14 years and older from NDSHS
Cardiovascular disease and diabetes	25% reduction in the overall mortality from cardiovascular diseases and diabetes	<ul style="list-style-type: none"> • Unconditional probability of dying between ages of 30 and 70 from cardiovascular diseases • Unconditional probability of dying between ages of 30 and 70 from diabetes • Age-standardised average blood pressure and percent of adults aged 18 years or more with elevated blood pressure (≥ 140/90 mmHg) • Age-standardised average blood pressure among patients with chronic kidney disease, and percent of adults aged 18 years or more with elevated blood pressure (≥ 140/90 mmHg) • Age-standardised average total cholesterol levels for adults aged 18 years or more, and percent with total cholesterol ≥ 5.0 mmol/L • Age-standardised prevalence of normal weight, overweight and obesity class I, II, III in persons 18 years or older • Prevalence of normal weight, overweight and obesity in children and adolescents
Chronic respiratory disease	25% reduction in the overall mortality from chronic respiratory diseases	<ul style="list-style-type: none"> • Unconditional probability of dying between ages of 30 and 70 from chronic obstructive pulmonary disease • Unconditional probability of dying between ages of 30 and 70 from asthma

³ Sub-indicators should be applied for each indicator to capture the effects of location (rural, remote, metropolitan), ethnicity (ATSI, other ethnic minority groups), mental illness and socioeconomic gradient. Indicators in bold are considered core.

Area	Target	Indicator
	Elimination of asthma deaths in adults aged under 65 years	<ul style="list-style-type: none"> Percent of patients aged 30-70 years who are readmitted within 28 days of discharge following a hospital admission related to asthma or COPD
Cancer	25% reduction in the overall mortality from cancer	<ul style="list-style-type: none"> Unconditional probability of dying between ages of 30 and 70 from cancer One-year survival rates for individuals diagnosed with the following cancers (individual indicators): lung, breast, colorectal, cervix, melanoma and prostate

Systemic improvements to primary care would support improvements in prevention. Australia's health system is fragmented, difficult to navigate, and there are challenges in coordinating care across multiple providers (Calder et al., 2019). The following system enablers would contribute to reduced mortality and morbidity from chronic diseases:

- guidelines and incentives for management of multimorbidity;
- further development of a centralised system for documenting delivery of key screening and immunisation interventions across multiple health settings and all age groups; and
- development of registers for COPD, asthma, diabetes and CVD in every general practice.

These issues and enablers are discussed further below.

Immunisations and attendance at self-management interventions are relevant indicators for the quality of preventative care, but inclusion is contingent on improvements in data quality. Because multiple providers exist for screening and immunisation, it is not possible to determine the number receiving appropriate care without a central point of documentation. The Australian Childhood Immunisation Register was expanded to a whole-of-life register in September 2016, which will aid long-term monitoring. In January 2019, the national HPV register was rolled into the Australian Immunisation Register (Australian Government, 2018). Expansion of the two registers is a welcome development that will assist in improving immunisation rates and targeting efforts to identify and support low-coverage areas. The proposed centralised cancer screening register is a much-needed initiative which will enable improvements in this area.

Table 2.3: Proposed Australian targets and indicators for reduction of premature mortality in noncommunicable disease (not currently available)

Area	Target	Future Indicator
Cardiovascular disease and diabetes	25% reduction in the overall mortality from cardiovascular diseases and diabetes	<ul style="list-style-type: none"> • Percent of adults aged 45-74 years, (or 30-74 years for Aboriginal and Torres Strait Islander) assessed as having high, moderate or low levels of overall CVD risk, based on the Australian 5-year score. • Percent of adults aged 45-74 years, (or 30-74 years for Aboriginal and Torres Strait Islander) with a 5-year risk of a cardiovascular event of 15% or more, including those with established CVD, being treated with both antihypertensive and lipid lowering medicines (and for glycaemic control if relevant) • Age-adjusted survival rates at 12 months after an acute coronary event*
Cancer	25% reduction in the overall mortality from cancer	<ul style="list-style-type: none"> • Disease staging at diagnosis for the following cancers (individual indicators): lung, breast, colorectal, cervix, melanoma and prostate

*This indicator has previously been nationally collected, but is currently under review ((Australian Institute of Health and Welfare, 2014a) p.476)

Uptake of secondary prevention programs such as cardiac, stroke and pulmonary rehabilitation were considered valid indicators of availability and quality of preventative care for high-risk patients on a national level, and quality of communication between primary and tertiary care. Uptake rates for pulmonary rehabilitation are less useful for assessing performance of local practices due to inadequate local availability, and data may be difficult to collect. Early diagnostic spirometry and removal of causes were seen as the key to reducing COPD mortality. Screening for COPD among smokers every 24 months, the percentage on COPD registers with documented spirometry testing, and again the percentage of COPD patients with pneumococcal and flu vaccines were seen as robust and feasible indicators in primary care. There was a strong argument for promoting care planning and particularly review of care plans as a generic measure to improve NCD care. There were alternative suggestions to add “cycles of care” similar to the current diabetes cycle of care for other conditions.

Prevention of diabetes complications was acknowledged as another important area to monitor, but current state of general practice data collection makes measurement difficult. Collection of absolute risk data is indicated for the ATSI population from age 30 years, reflecting national guidelines for CVD risk assessment. It is acknowledged that cardiovascular health checks for this population are warranted from a younger age. Measurement of renal function is recommended as chronic kidney disease is a highly under-diagnosed condition. In 2011/12, an estimated 1.7 million Australian adults (10% of the population) had biomedical signs of the disease, but only one in ten of this group self-reported that they had the condition.

The OECD recently noted that Australia is marked out from its peers by a surprising lack of data on the quality and outcomes of care, particularly for primary health care. They further noted that there are few indicators promoting quality of clinical care and patient outcomes, and there is little opportunity for GPs to be benchmarked against their peers (2015). A range of health service sub-indicators are proposed (Table 2.4) to improve data and health outcomes.

Table 2.4 Proposed health service delivery sub-indicators to achieve health targets⁵

Process of care indicators	Proposed source of data		
	General practice registers	Hospital databases	Other data source
Overall			
Percentage of patients with diabetes, cancer, COPD and CVD who have been screened for depression since diagnosis	•		
Percentage of eligible patients with any of respiratory disease, diabetes or CVD who have been administered flu vaccine and pneumococcal vaccine in the previous twelve months	•		
Percentage of patients for whom appropriate elements of cycles of care have been implemented in the previous twelve months: <ul style="list-style-type: none"> • CVD (or at high risk) • Diabetes (or at high risk) • Asthma • COPD (or at high risk) 	•		
Percentage of adults readmitted within 28 days of a hospital discharge following an admission related to diabetes, COPD, diabetes or cancer		•	
Percentage of adult patients who receive an integrated health check ⁶	•		
Percentage of patients with an NCD who have had a General Practice Management Plan reviewed in the previous 12 months	•		
Cardiovascular disease and diabetes			
Percentage of patients aged 45 years or more (excluding ATSI) who have had a CVD absolute risk assessment in the past two years	•		
Percentage of ATSI patients aged 30 years or more who have had a CVD absolute risk assessment in the past year	•		
Percentage of adult patients who have had a diabetes risk assessment	•		

⁵ Sub-indicators should be applied for each indicator to capture the effects of location (rural, remote, metropolitan), ethnicity (ATSI, other ethnic minority groups), mental illness and socioeconomic gradient.

⁶ Integrated health checks are comprehensive health assessments that simultaneously assess risk status for several diseases – suggested to assess diabetes risk, absolute CVD risk, and kidney function as a minimum – acknowledging the overlapping risk factors for many conditions. These may be performed as a single episode of care or in a planned manner over a cycle of care.

Process of care indicators

Proposed source of data

	General practice registers	Hospital databases	Other data source
Percentage of patients who attend cardiac rehabilitation within six months of an acute coronary event		•	

Respiratory

Percentage of smokers screened for COPD within the preceding 24 months	•		
Percentage of patients with COPD documented as ever having spirometry testing	•		
Percentage of COPD patients with both pneumococcal and flu vaccine up to date	•		
Percentage of smokers with COPD for whom smoking status is reviewed annually	•		
Percentage of patients with COPD who have ever attended pulmonary rehabilitation	•		
Percentage of patients with asthma in primary care who have an action plan recommending use of oral and inhaled corticosteroids for exacerbations, and have received self-management education for their use	•		

Cancer

Percentage of women aged 25-74 years with HPV testing in the past two years [From 1 December 2017, a five yearly Cervical Screening Test replaced the two yearly Pap test]			•
Percentage of women aged 18–70 years with HPV vaccine			•
Participation rate of women aged 50–74 years with breast cancer screening in the previous two years⁷			•
Participation rate in the National Bowel Cancer Screening Program (NBCSP)²			•
Percentage of adults with a positive NBCSP bowel cancer screening who had a follow-up diagnostic assessment, such as a colonoscopy			•
Percentage of colonoscopy patients for whom the duration of scope withdrawal was six minutes or longer		•	
Adenoma detection rates for individuals who returned a valid NBCSP screening test in a defined 12-month period		•	•
Percentage of patients at high risk of liver cancer who are vaccinated against hepatitis B			

⁷ This indicator must be reviewed regularly to ensure its relevance.

Process of care indicators

Proposed source of data

	Proposed source of data		
	General practice registers	Hospital databases	Other data source
Percentage of patients with diagnosed cancers for whom the time between initial GP consultation and diagnosis was acceptable	•		
Percent of patients with diagnosed cancers for whom the time between diagnosis and treatment initiation was acceptable		•	

2.5 Discussion

To achieve a 25% mortality reduction across all four disease groups will be challenging but feasible. This working group has produced a separate Heart Health technical paper (Dunbar et al., 2017) identifying the systematic implementation of absolute risk screening for CVD as the single intervention that is likely to prevent the greatest number of deaths from chronic disease. It is considered both feasible and cost-effective, and would be an appropriate starting point for a strategy to reduce chronic disease mortality among high-risk individuals. It is reasonable to attempt the elimination of asthma-related deaths in younger adults and for any mortality outcome to be treated as a sentinel event. Current data demonstrate that the Australian health system is failing to achieve appropriate levels of basic screening and preventive activities for conditions which account for the majority of mortality across Australia. Many of the actions required to facilitate reduced mortality from these key conditions are delivered in primary care. The major opportunity to reduce mortality in Australia lies in improving general practice and other primary care systems to support appropriate evidence-based screening and preventive intervention. Primary Health Networks are potentially a key resource for local implementation. Policy options are highlighted below.

Provide quality improvement support to primary care

Quality improvement in general practice can improve outcomes. Quality improvement in general practice requires support to develop local knowledge of improvement methods, ability to measure performance, and understanding of the evidence underpinning interventions. An essential prerequisite for quality improvement is the provision of adequate funding to conduct improvement work, including monitoring of progress against targets. Currently this is lacking in primary care.

Ensure the necessary IT infrastructure and support software

The availability of reliable performance data is important not just to measure national progress against targets, but also to assist with quality improvement at a local level. Regular provision of performance data acts both as a motivational tool for clinicians and as an educational tool to demonstrate the efficacy of their efforts. Variation in general practice software systems makes the standardisation of data collection fields and decision support difficult. Results from the TORPEDO and GASP studies (Peiris et al., 2015), designed to manage cardiovascular risk and asthma respectively, underscore the potential for tailored decision support systems to achieve improved quality of care. A uniform approach to the collection of clinical outcomes in general practice to improve patient care is a pressing national priority. Appropriate software, training and financial support is needed if this essential capacity is to become part of Australian general practice.

Introduce levers to drive appropriate health professional behaviours

The experience of other countries, and of Australian programs such as ESSENCE and the APCC, suggest that both incentives and sanctions are required at a macro level to encourage best practice in general practice. ESSENCE (Essential Service Standards for Equitable National Cardiovascular care for Aboriginal and Torres Strait Islander people) is an evidence-based approach to cardiovascular care. Currently, it is estimated that a small minority of practices maintain data at an adequate quality. Financial incentives are undoubtedly required to enable high-quality data provision, but uptake by reluctant practices might also require sanctions such as:

- restricting practice incentive payments or MBS item access to practices which submit quality data to PHNs; and
- 'stretch targets' (eg. for screening or immunisation) whereby health professionals are paid for exceptional performances for indicators that are directly linked to mortality outcomes.

Implement systems for sharing patient information and develop patient registers for key NCDs

Two further key barriers have been identified to optimal performance monitoring in primary care.

- The absence of patient registers at a practice level means the absence of clear target groups for intervention or denominators to accurately determine the prevalence of intervention delivery.
- The absence of data regarding the completion of interventions in other health settings. For example, screening and immunisation is carried out in diverse settings such as workplaces, community centres, pharmacies and hospitals, but agreed systems may not exist for communication of information about the screening or care people receive. Bowel cancer screening outside the NBCSP is an example. This situation can also result in duplication of care and uncoordinated care.

The Working Group recommends that general practice registers be developed and implemented for CVD, diabetes, asthma, and COPD. We also recommend that electronic systems and protocols be developed and implemented to allow the sharing of information across health settings, improved coordination of care, and measurement of performance from the overall health system.

Engage communities, including all relevant health and social care professionals

All Australians have a right to expect that certain standards of healthcare will be available to them regardless of their SES, ethnicity or physical location. There is a risk that health initiatives will widen health inequalities if access issues are not concurrently addressed, hence outcomes for targets and indicators should be assessed for equity. Conversely, effective systems for identifying and managing risks of NCDs improve equity. An equitable approach will require:

- a coordinated national response from a wide range of health and social care professionals to minimise the access barriers faced by underserved or marginalised communities;
- investment in appropriate IT infrastructure, multidisciplinary guidelines and incentives for collaboration;
- workforce redesign to promote receptivity to innovation, appropriate role substitution and integrated, team-based care; and
- community health promotion initiatives to meet the needs of different social contexts for care.

Awareness-raising through public campaigns, with local GP champions advocating to their communities, may have a valuable role in encouraging the most at-risk individuals to engage in preventative healthcare. The near-elimination of premature asthma deaths in Finland, accompanied by declines in disability, hospitalisation and asthma costs, was the result of a 10-year primary care program involving local multidisciplinary networks of health professionals, led by physicians (Haahtela et al., 2006). Similar models seem feasible in Australia for chronic disease management if sustained stakeholder and financial support is provided for development and implementation of a multidisciplinary action program. The key interventions to improve general practice screening rates for cancer are audit and feedback, GP endorsement letters, and electronic reminders for opportunistic intervention with patients who come for appointments. These interventions need to be combined on a system level (Emery et al., 2014), and are equally relevant to reduction in mortality from CVD and diabetes. There is reasonable evidence that local GP endorsement of invitations to attend screening and get vaccinations has a positive effect on uptake, even if the GPs themselves are not involved. General practice has not been engaged to date as much as it might be. The scale and complexity of change needed to meet targets and indicators across all disease groups requires an immediate and collective initiative.

Key data sources and references

Australian Centre for Asthma Monitoring. (2009). *Refining national asthma indicators: Delphi survey and correlation analysis*. Canberra, AIHW

Australian Government. (2018, 28 November 2018). HPV vaccination records are moving to the Australian Immunisation Register. Retrieved from <https://beta.health.gov.au/news/hpv-vaccination-records-are-moving-to-the-australian-immunisation-register>

Australian Institute of Health and Welfare. (2014a). *Australia's health 2014*. Canberra: AIHW,

Australian Institute of Health and Welfare. (2014b). *Cardiovascular disease, diabetes and chronic kidney disease - Australian facts: prevalence and incidence*, . Canberra, AIHW

Australian Institute of Health and Welfare. (2015). *Australian Burden of Disease Study: fatal burden of disease 2010*. Canberra, AIHW

Brown, V., Fuller, J., Ford, D., & Dunbar, J. (2014). *The enablers and barriers for the uptake, use and spread of primary health care collaboratives in Australia*, APHCRI Centre of Research Excellence in Primary Health Care Microsystems, The University of Queensland, Brisbane

Calder, R., Dunkin, R., Rochford, C., & Nichols, T. (2019). *Australian Health Services: too complex to navigate*. Melbourne, Mitchell Institute

Dunbar, J., Duggan, M., Fetherston, H., Knight, A. W., Mc Namara, K., Banks, E., et al. (2017). *Heart health: the first step to getting Australia's health on track*. Melbourne, Australian Health Policy Collaboration, Victoria University

Emery, J. D., Shaw, K., Williams, B., Mazza, D., Fallon-Ferguson, J., Varlow, M., et al. (2014). The role of primary care in early detection and follow-up of cancer. *Nat Rev Clin Oncol*, 11(1), 38-48. doi:10.1038/nrclinonc.2013.212

Gibson, P. G., & Powell, H. (2004). Written action plans for asthma: an evidence-based review of the key components. *Thorax*, 59(2), 94-99. doi:10.1136/thorax.2003.011858

Haahtela, T., Tuomisto, L. E., Pietinalho, A., Klaukka, T., Erhola, M., Kaila, M., et al. (2006). A 10 year asthma programme in Finland: major change for the better. *Thorax*, 61(8), 663-670. doi:10.1136/thx.2005.055699

Heeley, E. L., Peiris, D. P., Patel, A., A, Cass, A., Weekes, A., Morgan, C., et al. (2010). Cardiovascular risk perception and evidence-practice gaps in Australian general practice (the AusHEART study). *Med J Aust*, 192(5), 254-259.

National Vascular Disease Prevention Alliance. (2012). Guidelines for the management of absolute cardiovascular disease risk. Retrieved from <https://www.heartfoundation.org.au/images/uploads/publications/Absolute-CVD-Risk-Full-Guidelines.pdf>

Peiris, D., Usherwood, T., Panaretto, K., Harris, M., Hunt, J., Redfern, J., et al. (2015). Effect of a computer-guided, quality improvement program for cardiovascular disease risk management in primary health care: the treatment of cardiovascular risk using electronic decision support cluster-randomized trial. *Circ Cardiovasc Qual Outcomes*, 8(1), 87-95. doi:10.1161/circoutcomes.114.001235

World Health Organization. (2014). *Global status report on noncommunicable diseases 2014*. Geneva, WHO

3. Alcohol

Michael Livingston and Kypros Kypri

Since 2015, we have:

Produced two national report cards highlighting risky drinking behaviour for specific cohorts; [Australia's Health Tracker by Socio-Economic Status](#) and [Australia's Physical and Mental Health Tracker](#)

The WHO target and indicators relevant to harmful use of alcohol are provided in Table 3.1.

Table 3.1: WHO alcohol target and indicators

Framework Element	Target	Indicators
Harmful use of alcohol	At least a 10% reduction in the harmful use of alcohol nationally by 2025 (from 2011 levels)	<ul style="list-style-type: none">• Total (recorded and unrecorded) alcohol per capita (aged 15+ years old) consumption within a calendar year in litres of pure alcohol, as appropriate, within the national context• Age-standardised prevalence of heavy episodic drinking among adolescents and adults, as appropriate, within the national context• Alcohol-related morbidity and mortality among adolescents and adults, as appropriate, within the national context

3.1 Key findings

- Per capita alcohol consumption and the prevalence of risky drinking in Australia have declined, but rates of harms remain high and appear to be increasing in some population groups.
- The WHO indicators need to be expanded and made more specific to ensure that Australia can comprehensively monitor trends in alcohol consumption and related harms.
- The WHO targets of a 10% relative reduction in per capita alcohol consumption, the prevalence of heavy episodic drinking, and rates of morbidity and mortality are achievable within a comprehensive public-health-oriented policy framework.
- Policies focusing on the price, physical availability and promotion of alcohol have the strongest evidence base for reducing population levels of harmful alcohol consumption. Australian governments need to act decisively to ensure Australia reaches the WHO targets.

3.2 Introduction

The recent Global Burden of Disease study ranked alcohol consumption as the sixth leading risk factor for death and disability globally (GBD 2013 Risk Factors Collaborators, 2015). Some conditions, such as alcoholic liver disease are, by definition, wholly attributable to alcohol consumption. However, alcohol is a cross-cutting risk factor, causally implicated in more than 200 medical conditions (World Health Organization, 2014). Accordingly, one of the challenges in monitoring alcohol-related morbidity and mortality is the large number and variety of conditions partly attributable to alcohol consumption. For example, recent estimates suggest that globally, 8% of breast cancer and hypertensive deaths, 7% of ischaemic heart disease deaths, 11% of haemorrhagic stroke deaths and 22% of suicide deaths are attributable to alcohol consumption (World Health Organization, 2014).

Divergent trends

The most recent study examining alcohol's contribution to the burden of disease in Australia estimated that, in 2010, 5,554 deaths and 157,132 hospital admissions were attributable to alcohol consumption (Gao et al., 2014). Per capita consumption in Australia has averaged around 10 litres of pure alcohol per person since the early 1990s. It steadily increased between 2000 and 2008, but declined from 10.8 litres in 2008 to 9.4 litres in 2016-17 (Australian Bureau of Statistics, 2018). Similarly, survey-based estimates of both long-term and short-term risky drinking have declined recently (see Figure 3.1a), with particularly sharp declines among young people (Australian Institute of Health and Welfare, 2014). In contrast, trends in most indicators of alcohol-related harm have been stable or increasing (Lensvelt et al., 2015; Liang et al., 2011; Pascal et al., 2013) (see Figure 3.1b). There is evidence that harms in young women are increasing faster than they are in young men, but men still account for most of the harm burden (Lensvelt et al., 2015).

Figure 3.1a: Prevalence of monthly risky episodic drinking among Australians aged 15 years and over by gender, 2001-2013 & Figure 3.1b: Alcohol-related Emergency Department presentations per 1,000 persons, aged 15 years and older, by gender, 2005-06 – 2011-12 (all states excluding Tasmania)



Sources: (a) National Drug Strategy Household Survey and (b) *National Alcohol Indicators Project Bulletin 14* (2015). Trends in estimated alcohol-related emergency department presentations in Australia 2005-06 to 2011-12

Policy and economic conditions

While in recent years state and federal governments have developed alcohol strategies and policy frameworks (Department of Health, 2017; Ministerial Council on Drug Strategy, 2006, 2010; Ministerial Taskforce on Alcohol and Public Safety, 2008; NSW Health, 2007), there have been only a few major policy initiatives underpinned by strong evidence and these have been limited in scope or scale. On the supply side, an increase in taxation on pre-mixed spirits (or 'alcopops') in 2008 was followed by a sharp fall in their consumption, which was only partly offset by substitution to other beverage types (Chikritzhs et al., 2009). In general, though, alcohol has become more affordable in the last decade (Carragher & Chalmers, 2012). Similarly, restricting late trading in particular precincts has produced sharp declines in assaults in those precincts (Kypri, McElduff, et al., 2014; Menéndez et al., 2015), but the national trend has been toward greater alcohol availability (Manton et al., 2014). On the demand side, there has been no movement away from ineffective industry 'self-regulation' of broadcast advertising, nor any restrictions on alcohol industry sponsorship of sport, despite mounting evidence that exposure to such promotion increases the risk of hazardous drinking (O'Brien & Kypri, 2008; O'Brien et al., 2011). The decline in consumption since 2008 may be related to the impact of the global financial crisis and slowing down of the mining boom. Increasing rates of harm may have been driven by policies that encourage alcohol consumption in high-risk settings or by high-risk drinkers via expanded availability, particularly late at night (Chikritzhs & Stockwell, 2007; Livingston, 2011).

Data sources

Various sources of population survey and official data are potential indicators of harmful alcohol consumption in Australia. A full summary of alcohol's contribution to disease and injury is beyond the scope of this document, but it is important to note two things. First, acute episodes matter for NCD in terms of their contribution to the cumulative consumption level and also because of risks they confer for injury (included here under the umbrella of NCD) via elevated blood alcohol concentration. Second, for many of the outcomes in question, alcohol interacts with other causal factors. For example, trends in incidence and mortality from colorectal cancer (of which 10% is estimated to be attributable to alcohol) are also influenced by changes in diet and obesity. For these reasons, we require indicators that (1) capture both the acute and chronic risks of alcohol consumption and (2) have high alcohol-attributable fractions (for the morbidity and mortality indicators) to ensure that changes over time are likely to have been driven by changes in alcohol consumption.

3.3 Relevance of WHO targets

The WHO targets of 10% reductions in per-capita consumption, heavy episodic drinking and alcohol-related morbidity and mortality are appropriate but they lack the necessary specificity for surveillance. The targets are presented as a set of alternatives in the WHO documents, but we argue that Australia should aim to achieve all three: reducing overall consumption, risky drinking and rates of alcohol-related harm.

3.4 Proposed Australian target and indicators and feasibility

We provide a set of indicators for measuring alcohol consumption and related harm in Table 3.2. In addition to the complexity of alcohol's action on the body and as an agent in the aetiology of injury and other acute harms, the recent disjunction in trends (illustrated in Figures 3.1a and 3.1b) highlights the need for a suite of indicators to reduce the risk of invalid inferences about trends.

A 10% reduction in each of these indicators between 2010 and 2025 is not ambitious enough given the extent of alcohol-related harm in Australia, and evidence for effective countermeasures. The consumption indicators are already trending towards these targets, but there is no guarantee that these trends will continue without appropriate policy support. Concerted effort by federal and state governments will be necessary to ensure that reductions in alcohol-related morbidity and mortality are achieved. In October 2016, the working group supported and endorsed a 20% reduction in the harmful use of alcohol by 2025.

Table 3.2: Indicators for monitoring Australia's progress in reducing the harmful use of alcohol

Indicator	Description	Sub-groups	Source*
Per capita consumption	Consumption of pure alcohol per person aged ≥ 15 years, based on excise data, import clearances and sales of Australian-produced wine.	NA	ABS
Heavy episodic drinking	Proportion of the population aged ≥ 15 years reporting monthly or more frequent episodes where ≥ 5 drinks were consumed	Gender	NDSHS
Heavy episodic drinking, adolescents	Proportion of 12–17 years olds reporting at least one drinking occasion in the previous week where ≥ 5 drinks were consumed.	Gender	ASSAD
Long-term risky drinking	Proportion of the population aged ≥ 15 years reporting average alcohol consumption of more than 14 standard drinks per week	Gender	NDSHS
Emergency department presentations	Presentations for injury to Australian Emergency Departments on Friday, Saturday and Sunday nights	Gender and age (<30, ≥ 30 years)	NAIP
Hospital admissions for alcohol use disorders	Hospital admissions for Alcohol Use Disorder	Gender	NAIP
Alcoholic liver disease deaths	Mortality rates with primary cause of alcoholic liver cirrhosis	Gender	ABS

*ABS: Australian Bureau of Statistics; NDSHS: National Drug Strategy Household Survey (2016); ASSAD: Australian School Students Alcohol and Drug Survey; NAIP: National Alcohol Indicators Project

3.5 Discussion

There is a well-established evidence base identifying policy actions likely to reduce alcohol consumption and related harms (Babor et al. 2010). The three key policy approaches relate to pricing, physical availability and promotion.

Pricing

There is robust research evidence from many countries, including Australia, that increasing the price of alcohol reduces alcohol consumption and related harms (Wagenaar et al., 2009; Wagenaar et al., 2010). Modifying the price of the cheapest beverages is likely to produce the largest health gains (Gruenewald et al., 2006). This can be achieved both through modifying the tax rates applied to alcohol and via a mandated minimum unit price (Purshouse et al., 2010; Stockwell et al., 2013). The current policy allows for wine to be sold for less than \$0.30 per standard drink (The Australian Institute, 2015) such that wine has become the beverage of choice of our heaviest drinkers (Gray et al., 1999).

In late 2018, the Northern Territory Government introduced a minimum unit price for alcohol – becoming one of the first places in the world to introduce a minimum price for alcohol. The implementation of the minimum floor price follows a review of the Territory's alcohol policies and legislations and is amongst a suite of other policy measures to reduce risky consumption of alcohol (Northern Territory Government, 2017). A minimum price on alcohol will reduce alcohol-related harm and will contribute to more equal health outcomes.

Physical availability

Restricting the physical availability of alcohol, either via limiting the number of outlets in proximity to people's homes or the times of day at which alcohol can be sold, are effective means of reducing alcohol-related harm (Babor et al., 2010). In Australia, there is particularly strong evidence that liberalising pub trading hours increases alcohol-related harm (Chikritzhs & Stockwell, 2002, 2006) and that restrictions on late-night trading by pubs and bars reduces harm (Kypri, Davie, et al., 2014; Menéndez et al., 2015). There is growing evidence that expansion of the packaged liquor market has had negative impacts on population health, e.g. via increased rates of chronic disease and family violence (Livingston 2011a, Livingston 2011b). In relation to harms among young adults, there is evidence that increasing the minimum legal purchase age to 20 or 21 years is an effective policy (DeJong & Blanchette, 2014; Kypri K et al., 2014).

Promotion

Exposure to alcohol advertising among children and adolescents is associated with early initiation to drinking and with the volume consumed (Anderson et al., 2009). Alcohol is widely promoted in Australia, with children and adolescents exposed to intensive advertising via traditional media outlets (Carr et al., 2016; O'Brien et al., 2015; Pettigrew et al., 2012) and the internet (Carah et al., 2015). Furthermore, the current 'self-regulation' of alcohol advertising content in Australia is ineffective (Alcohol Advertising Review Board, 2015; Jones et al., 2008). A study investigating alcohol marketing during the 2018 Australian Football Grand Finals found 118 occurrences of alcohol advertising across 161 minutes of game time – all during children's viewing hours (Foundation for Alcohol Research and Education, 2018). This study led to the creation of a national campaign, End Alcohol Advertising in Sport which comprises of an elite group of sporting greats calling for a ban on alcohol advertising in sport (End Alcohol Advertising in Sport, 2018). Government regulation of the volume, timing, context (e.g., sport), and medium of advertising, is necessary to reduce harmful alcohol consumption.

Population groups of concern

Some population groups (e.g., young people, people in remote communities, dependent drinkers) are at particularly high risk of alcohol-related harm. It is important to note that the strategies outlined above are effective at reducing harm among these groups as well as in the population as a whole. For example, there is increasing evidence that sales restrictions in remote and regional communities reduce rates of injury (Margolis et al., 2011; Western Australian Drug and Alcohol Office, 2015) and that price policies are effective at reducing consumption among heavy drinkers and young people (Grossman et al., 1994; Wagenaar et al., 2010). Another group of concern are 'baby boomers' (Australians aged 60 years or more). Recent research suggests that the proportion of older Australians are increasingly becoming high risk drinkers (from 2.1% to 3.1% between 2004 and 2016) (Roche & Kostadinov, 2019).

Treatment for alcohol use disorder

The treatment system should be adequately resourced to provide high-quality care for patients with alcohol use disorder. Given the relatively small number of people seeking treatment and the wide distribution of harm from alcohol consumption, treatment should not be relied upon to address this problem. The emphasis on policy must be on the price, physical availability and promotion of alcohol for population level improvements to occur.

Better data

A noteworthy outcome of the Working Group's deliberations was recognition of the need for commitment by the Commonwealth and State governments to improve the quality of data used for outcome and risk factor surveillance in relation to alcohol. Mandated alcohol sales data at the outlet level is achievable (e.g., it is collected in Western Australia and Northern Territory) and would substantially improve surveillance and the capacity to estimate the effects of policy changes.

References

- Alcohol Advertising Review Board. (2015). *Alcohol Advertising Review Board Annual Report 2014/15*. Perth, McCusker Centre for Action on Alcohol and Youth, 2015
- Anderson, P., de Bruijn, A., Angus, K., Gordon, R., & Hastings, G. (2009). Impact of alcohol advertising and media exposure on adolescent alcohol use: a systematic review of longitudinal studies. *Alcohol Alcohol*, *44*(3), 229-243. doi:10.1093/alcalc/agn115
- Australian Bureau of Statistics. (2018). *4307.0.55.001 - Apparent Consumption of Alcohol, Australia, 2016-17*. Canberra, ABS
- Australian Institute of Health and Welfare. (2014). National Drug Strategy Household Survey 2013 – Supplementary Tables. Retrieved from <http://www.aihw.gov.au/alcohol-and-other-drugs/ndshs-2013/tables/>
- Babor, T., Caetano, R., Casswell, S., Edwards, G., Giesbrecht, N., Graham, K., et al. (2010). Alcohol: No Ordinary Commodity – a summary of the second edition. *Addiction*, *105*(5), 769-779. doi:doi:10.1111/j.1360-0443.2010.02945.x
- Carah, N., Brodmerkel, S., & Shaul, M. (2015). *Breaching the code: alcohol, Facebook and self-regulation*. Canberra, Foundation for Alcohol Research and Education
- Carr, S., O'Brien, K. S., Ferris, J., Room, R., Livingston, M., Vandenberg, B., et al. (2016). Child and adolescent exposure to alcohol advertising in Australia's major televised sports. *Drug Alcohol Rev*, *35*(4), 406-411. doi:10.1111/dar.12326
- Carragher, N., & Chalmers, J. (2012). *What are the options? Pricing and taxation policy reforms to redress excessive alcohol consumption and related harms in Australia*. Sydney, Bureau of Crime Statistics and Research
- Chikritzhs, T., Dietze, P. M., Allsop, S., Daube, M. M., Hall, W. D., & Kypri, K. (2009). The "alco pops" tax: heading in the right direction. *Medical Journal of Australia*, *190*(6), 294-295.
- Chikritzhs, T., & Stockwell, T. (2002). The impact of later trading hours for Australian public houses (hotels) on levels of violence. *J Stud Alcohol*, *63*(5), 591-599.
- Chikritzhs, T., & Stockwell, T. (2006). The impact of later trading hours for hotels on levels of impaired driver road crashes and driver breath alcohol levels. *Addiction*, *101*(9), 1254-1264. doi:10.1111/j.1360-0443.2006.01487.x
- Chikritzhs, T., & Stockwell, T. (2007). The impact of later trading hours for hotels (public houses) on breath alcohol levels of apprehended impaired drivers. *Addiction*, *102*(10), 1609-1617. doi:10.1111/j.1360-0443.2007.01981.x
- DeJong, W., & Blanchette, J. (2014). Case closed: research evidence on the positive public health impact of the age 21 minimum legal drinking age in the United States. *J Stud Alcohol Drugs Suppl*, *75 Suppl 17*, 108-115.
- Department of Health. (2017). *National Drug Strategy 2017-2026*,
- End Alcohol Advertising in Sport. (2018). Legends Rally to 'Red Card' Alcohol Ads in Sport [Press release]. Retrieved from <http://www.endalcoholadvertisinginsport.org.au/legends-rally-to-red-card-alcohol-ads-in-sport/>
- Foundation for Alcohol Research and Education. (2018). *Alcohol Marketing During the 2018 Australian Football Grand Finals*. Canberra, FARE

Gao, C., Ogeil, R., & Lloyd, B. (2014). *Alcohol's burden of disease in Australia*. Canberra, FARE and VicHealth in collaboration with Turning Point

GBD 2013 Risk Factors Collaborators. (2015). Global, regional, and national comparative risk assessment of 79 behavioural, environmental and occupational, and metabolic risks or clusters of risks in 188 countries, 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013. *Lancet*, 386(10010), 2287-2323. doi:10.1016/s0140-6736(15)00128-2

Gray, D., Chikritzhs, T., & Stockwell, T. (1999). The Northern Territory's cask wine levy: health and taxation policy implications. *Aust N Z J Public Health*, 23(6), 651-653.

Grossman, M., Chaloupka, F. J., Saffer, H., & Laixuthai, A. (1994). Effects of alcohol price policy on youth: a summary of economic research. *Journal of Research on Adolescence*, 4(2), 651-653.

Gruenewald, P. J., Ponicki, W. R., Holder, H. D., & Romelsjö, A. (2006). Alcohol Prices, Beverage Quality, and the Demand for Alcohol: Quality Substitutions and Price Elasticities. *Alcoholism: Clinical and Experimental Research*, 30(1), 96-105. doi:doi:10.1111/j.1530-0277.2006.00011.x

Jones, S. C., Hall, D., & Munro, G. (2008). How effective is the revised regulatory code for alcohol advertising in Australia? *Drug Alcohol Rev*, 27(1), 29-38. doi:10.1080/09595230701499175

Kypri K, Davie, G., McElduff, P., Connor, J., & Langley, J. (2014). Effects of lowering the minimum alcohol purchasing age on weekend assaults resulting in hospitalization in New Zealand. *Am J Public Health*, 104(8), 1396-1401. doi:10.2105/ajph.2014.301889

Kypri, K., Davie, G., McElduff, P., Connor, J., & Langley, J. (2014). Effects of lowering the minimum alcohol purchasing age on weekend assaults resulting in hospitalization in New Zealand. *Am J Public Health*, 104(8), 1396-1401. doi:10.2105/ajph.2014.301889

Kypri, K., McElduff, P., & Miller, P. (2014). Restrictions in pub closing times and lockouts in Newcastle, Australia five years on. *Drug Alcohol Rev*, 33(3), 323-326. doi:10.1111/dar.12123

Lensvelt, E., Gilmore, W., Gordon, E., Hobday, M., Liang, W., & Chikritzhs, T. (2015). *Trends in estimated alcohol-related emergency department presentations in Australia, 2005-06 to 2011-12*. Perth, National Drug Research Institute, Curtin University

Liang, W., Chikritzhs, T., Pascal, R., & Binns, C. W. (2011). Mortality rate of alcoholic liver disease and risk of hospitalization for alcoholic liver cirrhosis, alcoholic hepatitis and alcoholic liver failure in Australia between 1993 and 2005. *Intern Med J*, 41(1a), 34-41. doi:10.1111/j.1445-5994.2010.02279.x

Livingston, M. (2011). A longitudinal analysis of alcohol outlet density and domestic violence. *Addiction*, 106(5), 919-925. doi:10.1111/j.1360-0443.2010.03333.x

Manton, E., Room, R., Giorgi, C., & Thorn, M. (2014). *Stemming the tide of alcohol: liquor licensing and the public interest*. Canberra, Foundation of Alcohol Research and Education

Margolis, S. A., Ypinazar, V. A., Muller, R., & Clough, A. (2011). Increasing alcohol restrictions and rates of serious injury in four remote Australian Indigenous communities. *Medical Journal of Australia*, 194(10), 503-506.

Menéndez, P., Weatherburn, D., Kypri, K., & Fitzgerald, J. (2015). *Lockouts and last drinks*. Sydney, Bureau of Crime Statistics and Research

- Ministerial Council on Drug Strategy. (2006). *National Alcohol Strategy 2006-2009*. Canberra, MCDS
- Ministerial Council on Drug Strategy. (2010). *The National Drug Strategy 2010-2015: A framework for action on alcohol, tobacco, illegal and other drugs*. Canberra, MCDS
- Ministerial Taskforce on Alcohol and Public Safety. (2008). *Victoria's Alcohol Action Plan - 2008-2013*. Melbourne, Victorian Government
- Northern Territory Government. (2017). *Alcohol Policies and Legislation Review*. Northern Territory, Northern Territory Government
- NSW Health. (2007). *Drug and Alcohol Plan 2006-2010: a plan for the NSW Health Drug and Alcohol Program*. Sydney, NSW Health
- O'Brien, K. S., & Kypri, K. (2008). Alcohol industry sponsorship and hazardous drinking among sportspeople. *Addiction, 103*(12), 1961-1966. doi:10.1111/j.1360-0443.2008.02371.x
- O'Brien, K. S., Miller, P. G., Kolt, G. S., Martens, M. P., & Webber, A. (2011). Alcohol industry and non-alcohol industry sponsorship of sportspeople and drinking. *Alcohol Alcohol, 46*(2), 210-213. doi:10.1093/alcalc/agq095
- O'Brien, K. S., Carr, S., Ferris, J., Room, R., Miller, P., Livingston, M., et al. (2015). Alcohol Advertising in Sport and Non-Sport TV in Australia, during Children's Viewing Times. *Plos One, 10*(8), e0134889. doi:10.1371/journal.pone.0134889
- Pascal, R., Liang, W., Gilmore, W., & Chikritzhs, T. (2013). Risks of alcohol-attributable hospitalisation and death in Australia over time: Evidence of divergence by region, age and sex. *The Australasian medical journal, 6*(3), 134-151. doi:10.4066/AMJ.2013.1618
- Pettigrew, S., Roberts, M., Pescud, M., Chapman, K., Quester, P., & Miller, C. (2012). The extent and nature of alcohol advertising on Australian television. *Drug Alcohol Rev, 31*(6), 797-802. doi:10.1111/j.1465-3362.2012.00439.x
- Purshouse, R. C., Meier, P. S., Brennan, A., Taylor, K. B., & Rafia, R. (2010). Estimated effect of alcohol pricing policies on health and health economic outcomes in England: an epidemiological model. *Lancet, 375*(9723), 1355-1364. doi:10.1016/s0140-6736(10)60058-x
- Roche, A. M., & Kostadinov, V. (2019). Baby boomers and booze: we should be worried about how older Australians are drinking. *Medical Journal of Australia, 210*(1), 38-39. doi:10.5694/mja2.12025
- Stockwell, T., Zhao, J., Martin, G., Macdonald, S., Vallance, K., Treno, A., et al. (2013). Minimum alcohol prices and outlet densities in British Columbia, Canada: estimated impacts on alcohol-attributable hospital admissions. *Am J Public Health, 103*(11), 2014-2020. doi:10.2105/ajph.2013.301289
- The Australian Institute. (2015). *The Goon Show - How the tax system works to subsidise cheap wine and alcohol consumption*. Canberra, The Australian Institute
- Wagenaar, A. C., Salois, M. J., & Komro, K. A. (2009). Effects of beverage alcohol price and tax levels on drinking: a meta-analysis of 1003 estimates from 112 studies. *Addiction, 104*(2), 179-190. doi:10.1111/j.1360-0443.2008.02438.x
- Wagenaar, A. C., Tobler, A. L., & Komro, K. A. (2010). Effects of alcohol tax and price policies on morbidity and mortality: a systematic review. *Am J Public Health, 100*(11), 2270-2278. doi:10.2105/ajph.2009.186007

Western Australian Drug and Alcohol Office. (2015). The impact of liquor restrictions in Halls Creek [Press release]. Retrieved from <https://www.mediastatements.wa.gov.au/Pages/Barnett/2015/02/New-report-on-Halls-Creek-liquor-restrictions.aspx>

World Health Organization. (2014). *Global status report on alcohol and health, 2014 edition*. Geneva, WHO

4. Physical inactivity

Jaimie-Lee Maple and Adrian Bauman

Original authors: Jonathan Malo and Lyn Roberts

Since 2015, we have:

- Produced a national implementation strategy, [Active travel: pathways to a healthy future](#)
 - *Active travel* calls for a \$90 million investment over three years to support walking, cycling and scooting to and from school for all Australian children
- Developed a consensus statement supported by physical activity, health, education and parental groups
- Produced two national report cards highlighting physical activity levels for specific cohorts; [Australia's Health Tracker by Socio-Economic Status](#) and [Australia's Physical and Mental Health Tracker](#)

The WHO target and indicators relevant to physical inactivity are shown in Table 4.1.

Table 4.1: WHO physical inactivity target and indicators

Framework element	Target	Indicators
Physical inactivity	A 10% relative reduction in prevalence of insufficient physical activity	Prevalence of insufficiently physically active adolescents, defined as less than 60 minutes of moderate to vigorous intensity activity daily
		Age-standardised prevalence of insufficiently physically active persons aged 18+ years (defined as less than 150 minutes of moderate-intensity activity per week, or equivalent)

The physical activity recommendations in Australia vary across the life course and are shown in Table 4.2.

Table 4.2: Physical activity guidelines and recommendations in Australia (Australian Government Department of Health 2019).

Age group	Physical activity recommendations ⁸
0–5 years	<p>Infants (Birth to one year) physical activity particularly through supervised floor-based play in safe environments should be encouraged from birth. For those not yet mobile, 30 minutes of tummy time including reaching and grasping, pushing and pulling, and crawling spread throughout the day during awake periods is encouraged.</p> <p>Toddlers and Pre-schoolers (1 to 5 years) should spend at least 180 minutes a day doing a variety of physical activities including energetic play such as running, jumping and twirling spread throughout the day – noting more is better.</p>

⁸ These represent the time-based physical activity recommendations for Australians. Additional recommendations are available from [Australia's Physical Activity and Sedentary Behaviour Guidelines](#).

5–12 years	Accumulate at least 60 minutes of moderate to vigorous intensity physical activity every day. Children’s physical activity should include a variety of aerobic activities, including some vigorous intensity activity. On at least three days per week, children should engage in activities that strengthen muscle and bone.
13–17 years	Accumulate at least 60 minutes of moderate to vigorous intensity physical activity every day. Children’s physical activity should include a variety of aerobic activities, including some vigorous intensity activity. On at least three days per week, children should engage in activities that strengthen muscle and bone.
18–64 years	Accumulate 150 to 300 minutes (2½ to 5 hours) of moderate intensity physical activity or 75 to 150 minutes (1¼ to 2½ hours) of vigorous intensity physical activity, or an equivalent combination of both moderate and vigorous activities, each week, Do muscle strengthening activities on at least 2 days each week.
65+ years	<ol style="list-style-type: none"> 1. Do some form of physical activity, no matter their age, weight, health problems or abilities 2. Be active every day in as many ways as possible, doing a range of physical activities that incorporate fitness, strength, balance and flexibility. 3. Accumulate at least 30 minutes of moderate intensity physical activity on most, preferably all days. 4. For those who have stopped physical activity, or who are starting a new physical activity, should start at a level that is easily manageable and gradually build up the recommended amount, type and frequency of activity. <p>Older people who continue to enjoy a lifetime of vigorous physical activity should carry on doing so in a manner suited to their capability into later life, provided recommended safety procedures and safety procedures and guidelines are adhered to.</p>

4.1 Key findings

- Over half of Australian adults (53%) did not meet physical activity recommendations in 2017/18. Groups with particularly high levels of physical inactivity included adolescents, older Australians and those at greater levels of socioeconomic disadvantage.
- The WHO target of 10% relative reduction of physical inactivity by 2025 is achievable in Australia if a comprehensive set of policies and initiatives is put in place and sustained.
- A robust national NCD surveillance system that provides accurate data on physical inactivity levels using a standardised set of instruments across all states and territories, and separately for adults and children, is required to adequately track Australia’s progress towards the WHO targets
- Development and implementation of a **national physical activity action** plan is an urgent priority to address physical inactivity across a range of settings and population groups.
- The greatest gains are to be had from implementing population-level cross-sectoral policies and initiatives that target specific age groups across the lifespan and in a variety of settings, such as promoting active transport, community-based programs,

providing infrastructure that supports structured and unstructured physical activity, and campaigns that promote increased physical activity.

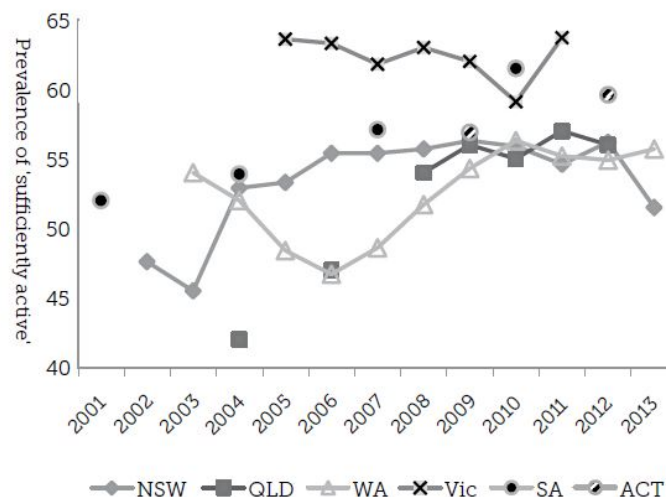
4.2 Introduction

Physical inactivity is among the leading contributors to the burden of disease in Australia (Begg et al., 2007) and has been estimated to contribute a similar proportion to global premature mortality as smoking and obesity (Lee et al., 2012). The majority of the disease burden from physical inactivity arises from ischaemic heart disease, type 2 diabetes and stroke (Begg et al., 2007).

The results of the 2017-18 NHS demonstrate that the vast majority of Australians are not sufficiently physically active for good health (Australia Bureau of Statistics, 2018). Levels of physical activity vary considerably according to age, sex, location, education, and levels of disadvantage. Older Australians (aged 65+ years), children and adolescents (aged 5–17 years), and the most socioeconomically disadvantaged make up groups with some of the highest levels of insufficient physical activity in Australia. As the proportion of older people in Australia continues to increase, the burden of disease attributable to physical inactivity will likely follow.

There has been limited efforts at standardisation of physical activity surveillance in Australia over the past 30 years (Bauman & Chau, 2015). Changes to survey questions have led to varying estimates of the prevalence of physical inactivity across jurisdictions, although some states have maintained consistent and standardised monitoring of physical activity prevalence (Figure 4.1). More recently, use of accelerometers to objectively measure physical activity has added precision, but also complexity, to the epidemiological methods with which physical activity is measured. Updates to physical activity recommendations and guidelines have also made it challenging to monitor trends in the prevalence of meeting guidelines.

Figure 4.1: Prevalence of sufficient physical activity from state- and territory-based surveys in Australia, 2001 to 2013



Source: *Monitoring population trends through physical activity surveillance – a chequered history in Australia* (Bauman & Chau 2015, p. 7).

4.3 Relevance of WHO targets

The WHO target of a 10% relative reduction in prevalence of insufficiently active children and adults is relevant to Australia. Investment in increasing physical activity across the life course provides many health benefits and would also contribute towards Australia's progress towards other WHO targets related to obesity, diabetes, high blood pressure and premature mortality from NCD (Lee et al., 2012; Warburton et al., 2006), in addition to the well-recognised benefits of physical activity for psychological wellbeing and mental health (Office of Disease Prevention and Health Promotion, 2018; U.S. Department of Health and Human Services, 1996).

The WHO (2018) global action plan outlined a target of a 15% relative reduction in the global prevalence of physical inactivity in adults and in adolescents by 2030. The five year extension aligns with the 2030 Sustainable Development Goals Agenda and provides a period of 12 years (2018-2030) for policy action and implementation (World Health Organization, 2018). The additional five percent increment reflects the additional five years for action and is consistent with existing commitments and indicators for 2025 (World Health Organization, 2018).

4.4 Proposed Australian target and indicators and feasibility

The most recent prevalence estimates of insufficient physical activity in Australia and corresponding targets for a 10% relative reduction are shown below in Table 4.3.

The proposed WHO target for insufficiently physically active adults is achievable in Australia if a comprehensive package of policies and interventions is implemented and sustained over time. There is sufficient evidence to support the effectiveness of a range of interventions in decreasing levels of physical inactivity (Heath et al., 2012). The proposed target for insufficiently physically active children and adolescents will be more difficult to achieve, and is unlikely to be met without significant interventions. Additionally, efforts and investments into increasing physical activity levels should aim to narrow the inequality gap that exists for the most disadvantaged (see Appendix).

Table 4.3: Prevalence of insufficiently active persons in Australia 2011/12 and corresponding WHO targets by age group

Age group	Prevalence of insufficiently physically active persons	
	2010 baseline (%)	2025 WHO target* (%)
Children and adolescents aged 5-17 years [†] (ABS 2013b)	80.4	72.4
Adults aged 18+ years [‡] (ABS 2013a)	56.0	50.4

* Target calculated based on a 10% relative reduction in physical inactivity within corresponding group

[†] Based on physical activity recommendation of 60 minutes each day

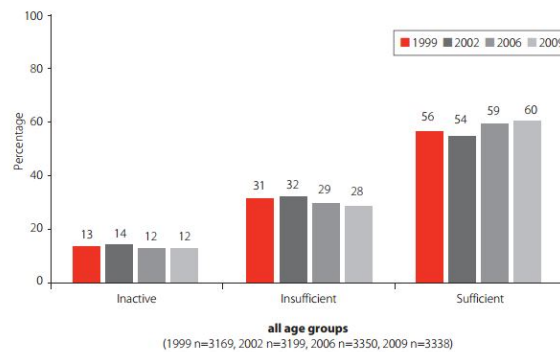
[‡] Based on physical activity recommendation of 150 minutes per week. Updated guidelines have removed the sessions requirement and thus the baseline prevalence and the WHO target will need to be updated according to estimates based on the new guidelines.

The physical activity working group notes the change in the definition for 'proportion of persons meeting guidelines' in the 2017/18 National Health Survey compared to earlier surveys. The results reported from the 2017/18 survey are therefore not comparable to previous survey. This report (and future editions) will report against the benchmark of 150 minutes or more of 'exercise only in the last week' (which is the only comparable question asked over three decades of the NHS) to measure trends over time to track Australia's progress against the 2025 target. This definition excludes some types of physical activity undertaken, and does not

assess health-related walking, but in the opinion of the working group it is closest to the definition used in the 2011/12 survey.

The changes in prevalence of physical activity in Western Australia during the presence of the Physical Activity Taskforce from 2001 to 2012 demonstrate the progress (4% increase in meeting guidelines) that can be achieved when a comprehensive and coordinated effort to increase physical activity is sustained (Figure 4.2).

Figure 4.2: Physical activity trends in Western Australia, 1999 to 2009



Source: *Physical activity levels of Western Australian adults 1009: findings from the Physical Activity Taskforce Adult Physical Activity Survey* ((Rosenberg et al., 2010) p.14).

Additional secondary indicators that are of relevance to reducing levels of insufficiently active persons are:

- presence of a national physical activity plan (Global Observatory for Physical Activity (GOPA), 2019);
- existence of an **adequate surveillance system** to monitor and track physical inactivity levels;
- presence of national strategies to improve physical activity across the lifespan and in a range of settings such as schools, workplaces and communities;
- existence of a coordinated mechanism (task force, coalition) to address physical inactivity;
- strength training recommendations for adults and older Australians;
- prevalence of children meeting screen-based activity recommendations; and
- prevalence of adults meeting recommendations related to daily sitting time, to be developed in the future as evidence evolves sufficient for specific evidence-based guidelines in this area.

4.5 Discussion

In order to adequately monitor physical activity trends, progress the development, and assess the impact of policies and initiatives, measurement of physical activity needs to be standardised and maintained across all states and territories, using similar methods and with prevalence estimates based on the same metrics.

Physical activity should be promoted throughout all stages of life and in a variety of settings. The following are the most valuable opportunities to increase physical activity levels in Australia, and should form the key initiatives of a national physical activity plan (Global Advocacy for Physical Activity (GAPA) the Advocacy Council of the International Society for Physical Activity (ISPAH), 2012; National Heart Foundation of Australia, 2015).

The WHO (2018) Global Action Plan outlined four strategic objectives for the 20 multidimensional policy actions in efforts to reduce levels of physical inactivity and sedentary behaviour (World Health Organization, 2018). The four objectives include creating active societies, active environments, active people and active systems. It is proposed that in combination these objectives capture a whole-of-system approach to create a society that intrinsically values and prioritises policy investment in physical activity as part of everyday life (World Health Organization, 2018). The best-buy strategies for a national physical activity plan would be to design and implement substantial population actions in the following areas:

Active children and schools

- Mandate delivery of high quality physical education lessons and active curricula for all ages (kindergarten to Year 12).
- Work with local government to enhance neighbourhood infrastructure and physical environments to support children to play safely, to walk and cycle.
- Engage staff, students, parents and communities in supporting the above policies and programs.

Active workers and workplaces

- Provide targeted education and programs for workplaces to promote physical activity to support workers' physical and mental health.
- Support businesses to invest in evidence-based policies and programs that increase physical activity.
- Provide fringe benefits tax exemption for workplace packaging of sporting and health club memberships, bicycle purchases and public transport use.

Active older people and aged care

- Support delivery of accessible and affordable evidence-based physical activity programs, delivered by a range of community organisations and primary care providers to help seniors stay well and manage existing health problems.
- Introduce policy mechanisms to mandate the delivery of physical activity programs in aged-care services and settings and account for the mobility and functional capabilities of older Australians when designing spaces and places.
- Engage staff of aged care facilities, carers and communities in supporting the above policies and programs.

Active transport

- Ensure walk/cycle-to-school /education programs are supported and promoted by all local governments and for all age groups.
- Develop and fund a national walking and cycling strategy embracing walking, cycling and public transport to improve health and decrease traffic congestion.
- Provide financial or tax incentives to encourage employees to walk, cycle or take public transport to work.
- Work with state, territory and local governments to enhance laws that protect vulnerable road users.
- Develop and implement policies that promote land use for footpaths, bikeways and public transport.

Active cities and communities

- Support local government infrastructure and program funding that promotes active living across the lifespan, with a particular focus on reducing inequity.
- Implement national urban design policies that enable active living for all ages and abilities.
- Assist local government to create and expand regional rail trails, cycle routes, walking and hiking tracks to promote tourism and recreation.
- Improve attractiveness, safety and conduct public education to increase awareness of local facilities and parks.
- Support whole-of-community and targeted (for those at risk) approaches to increasing physical activity that engage multiple sectors across a range of settings for all ages.
- Support and implement community sport systems that provide a range of traditional and non-traditional sporting opportunities for all ages, genders and sociocultural backgrounds.

- Engage sporting organisations and athletes to promote participation in sport at all levels.

Active health care

- Fund evidence-based physical activity and lifestyle modification programs for people with or at risk of chronic disease.
- Establish referral pathways and subsidies for GPs and allied health professionals (eg. exercise physiologists) to educate and refer patients into evidence-based physical activity and lifestyle modification programs.
- Promote physical activity as part of behavioural risk screening in primary care settings and support community-based programs to support behaviour change related to physical activity.

Public education and campaigns

- Fund national education programs to encourage more active families, workers and seniors.
- Support and sustain paid and non-paid forms of media to support 'Move More – Sit Less' initiatives, raise awareness, increase knowledge, shift community norms and values to motivate population groups to be active, and promote a physically active culture in Australia.

4.6 Acknowledgement

The Working Group would like to acknowledge the '*Move More, Sit Less*': *Australia needs a funded National Physical Activity Action Plan* communiqué and work undertaken by the National Heart Foundation of Australia in developing a framework and advocating for a National Physical Activity Action Plan.

References

- Australia Bureau of Statistics. (2018). *National Health Survey: First Results 2017-18*. Canberra, ABS
- Bauman, A., & Chau, J. (2015). Monitoring Population Trends Through Physical Activity Surveillance - a Chequered History in Australia. *Australasian Epidemiologist*, 22(1), 5-8.
- Begg, S., Vos, T., Barker, K., Stevenson, C., Stanley, L., & Lopez, A. (2007). *The burden of disease and injury in Australia 2003*. Canberra: AIHW.
- Global Advocacy for Physical Activity (GAPA) the Advocacy Council of the International Society for Physical Activity (ISPAH). (2012). NCD prevention: investments [corrected] that work for physical activity. *Br J Sports Med*, 46(10), 709-712. doi:10.1136/bjism.2012.091485
- Global Observatory for Physical Activity (GOPA). (2019). The Global Physical Activity Atlas. Retrieved from <http://www.globalphysicalactivityobservatory.com/>
- Heath, G. W., Parra, D. C., Sarmiento, O. L., Andersen, L. B., Owen, N., Goenka, S., et al. (2012). Evidence-based intervention in physical activity: lessons from around the world. *Lancet*, 380(9838), 272-281. doi:10.1016/s0140-6736(12)60816-2
- Lee, I. M., Shiroma, E. J., Lobelo, F., Puska, P., Blair, S. N., & Katzmarzyk, P. T. (2012). Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. *Lancet*, 380(9838), 219-229. doi:10.1016/s0140-6736(12)61031-9
- National Heart Foundation of Australia. (2015). *'Move More, Sit Less': Australia needs a National Physical Activity Action Plan*. Melbourne, National Heart Foundation of Australia
- Office of Disease Prevention and Health Promotion. (2018). *The 2018 Physical Activity Guidelines Advisory Committee*. United States,
- Rosenberg, M., Mills, C., McCormack, G., Martin, K., Grove, B., Pratt, S., et al. (2010). *Physical activity levels in Western Australian adults 2009: findings from the Physical Activity Taskforce Physical Activity Survey*. Perth, Health Promotion Unit, The University of Western Australia
- U.S. Department of Health and Human Services. (1996). *Physical activity and health: a report of the Surgeon General*. Atlanta, GA, U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion
- Warburton, D. E., Nicol, C. W., & Bredin, S. S. (2006). Health benefits of physical activity: the evidence. *Cmaj*, 174(6), 801-809. doi:10.1503/cmaj.051351
- World Health Organization. (2018). *Global action plan on physical activity 2018–2030: more active people for a healthier world*. Geneva, WHO

5. Salt

Carley Grimes and Jacqui Webster

Original authors: Sonya Stanley, Carley Grimes and Bruce Bolam

Since 2015, we have:

Produced a journal article, '[The Healthy Eating Agenda in Australia. Is Salt a Priority for Manufacturers?](#)' Published in *Nutrients*, (Lindberg et al., 2017).

The WHO target and indicator relevant to dietary salt intake is in Table 5.1.

Table 5.1: WHO salt target and indicator

Framework Element	Target	Indicator
Salt/sodium intake	A 30% relative reduction in mean population intake of salt/sodium	Age-standardised mean population intake of sodium expressed as salt grams per day

A high salt intake contributes to the development of high blood pressure, which is a major risk factor for heart disease and stroke. High blood pressure afflicts one in three Australian adults (Australia Institute of Health and Welfare, 2015). In Australia, heart disease and stroke are the leading underlying causes of death. In 2010, high blood pressure was responsible for 58% of all stroke deaths and 46% of heart disease deaths. High blood pressure also contributes to dementia, which is the fourth leading cause of overall burden of disease and the third leading cause of disability burden in Australia (Australian Institute of Health and Welfare, 2012a, 2012b). Research by VicHealth (Victorian Health Promotion Foundation) found six times more deaths in Victoria were attributable to high salt than to road crashes (Trieu & Webster, 2015).

Population salt reduction is recognised as one of the most effective and cost-effective strategies to improve population health (Cobiac et al., 2012). Reducing population salt intake is predicted to lead to significant falls in blood pressure and reduces the risk of cardiovascular diseases at 1-2% of the cost of clinical management of hypertension. Given the high intakes of salt in Australian adults and children coupled with the significant burden of high blood pressure in Australia, the WHO target is highly relevant (Australian Institute of Health and Welfare, 2005; He & MacGregor, 2011).

5.1 Key findings

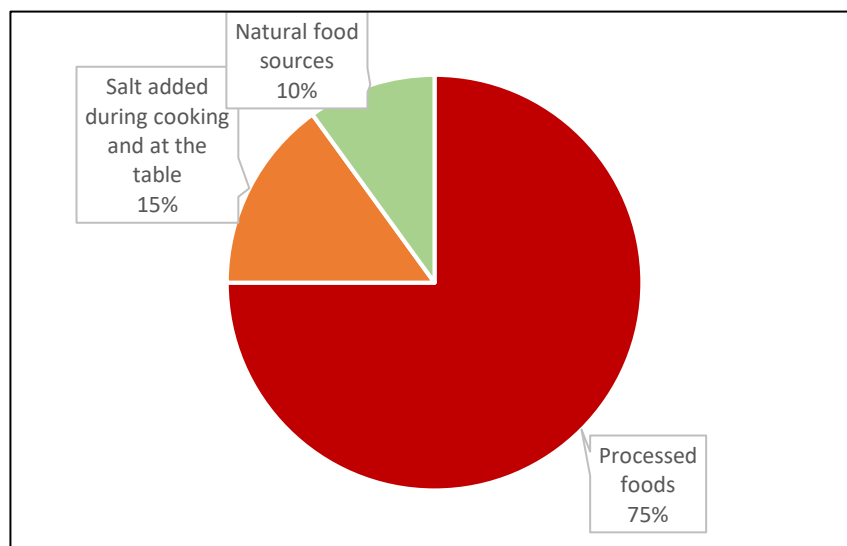
- Reducing mean salt intake by 30% by 2025 is challenging but entirely feasible for Australia and would be one of the most cost-effective, efficient and equitable ways to improve population health over the next decade.
- Salt intake of Australian adults and children is well above the above dietary recommendations.
- Reducing population salt intake by 30% would result in 3500 fewer deaths a year from strokes and heart attacks and save millions of dollars to the healthcare system.
- Dementia is also linked with high blood pressure so can be addressed by population salt reduction.

- Processed foods are the major contributor to high salt intakes, and specific targets for reductions of salt levels in foods are required to drive effective reformulation of these foods.
- Some progress has been made through a voluntary approach to salt reduction, but the use of progressive targets and stronger government-led monitoring and oversight is required to increase effectiveness and provide a level playing field for the food industry in Australia.
- Monitoring needs to include regular assessment of population salt intake. Ideally this activity would be integrated into a national NCD surveillance system based on the AHS, including anthropometric and biomedical measurements (with urine samples to measure salt intake) conducted every five years.

5.2 Introduction

Most salt in the Australian diet (75%) comes from processed foods such as bread and cereal products, soups and sauces, processed meats and convenience foods including pizza, sandwiches and fast food meals. Salt added during cooking or at the table accounts for about 15% of daily intake (Figure 5.1) (James et al., 1987), and 10% is naturally occurring in foods.

Figure 5.1: Sources of salt in the Australian diet



5.3 Salt intake in Australia

- National data from the 2011-12 AHS shows mean daily intake of salt from food sources was 7.1 grams for men and 5.3 grams for women (Australian Bureau of Statistics, 2013).
- Australian adults consume on average 8.7 grams of salt per day. Males consume 10.1 grams per day and females 7.3 grams per day (Land, Mary-Anne. et al., 2018). This is a robust estimate based on data collected from 3896 individuals across 26 research studies conducted during 1989 and 2015. Salt intake was assessed using analysis of urine collected during a 24-hour period which is the most accurate measure of total daily salt intake as it captures salt from food sources and salt added during cooking and at the table. From 1989 to 2015, salt intake has remained stable.
- The parallel survey arm completed with Aboriginal and Torres Strait Islander communities found comparable intakes of salt, with reported mean daily intakes from food sources of 7.0 grams for men and 5.3 grams for women (Australian Bureau of Statistics, 2015).
- The dietary survey method used by the AHS underestimates total daily salt intake as people tend to under-report, and it does not measure the amount of salt added during cooking and at the table (Santos et al., 2017).
- To monitor progress towards the 30% mean salt reduction target by 2025, data from the 2011 Victorian Health Monitor survey will be used as a baseline measure. In this study of 598 adults, average daily intake of salt measured by 24-hour urine collection was 8.1 grams (9.4 grams for men and 6.9 grams for women) (Nowson et al., 2015)
- No salt intake data from 24-hour urine collections is available which specifically reports for Aboriginal and Torres Strait Islander peoples.
- High salt intake among children is particularly concerning as it has long-term effects on eating habits and cardiovascular risk.
- In a large sample of 665 Victorian primary school children, the average 24-hr urinary excretion of salt was 6.1 grams per day, with 72% exceeding the recommended daily upper level of intake of sodium (salt) (Grimes et al., 2017)
- Analysis of national dietary data collected in children shows that from 2007 to 2011/12 there was a small yet significant 8% decline in the amount of salt children and adolescents aged 2-16 years consumed from food sources (Grimes et al., 2018). During this time, more than 80% of children were still eating more than the recommended daily upper level for sodium (salt) intake.

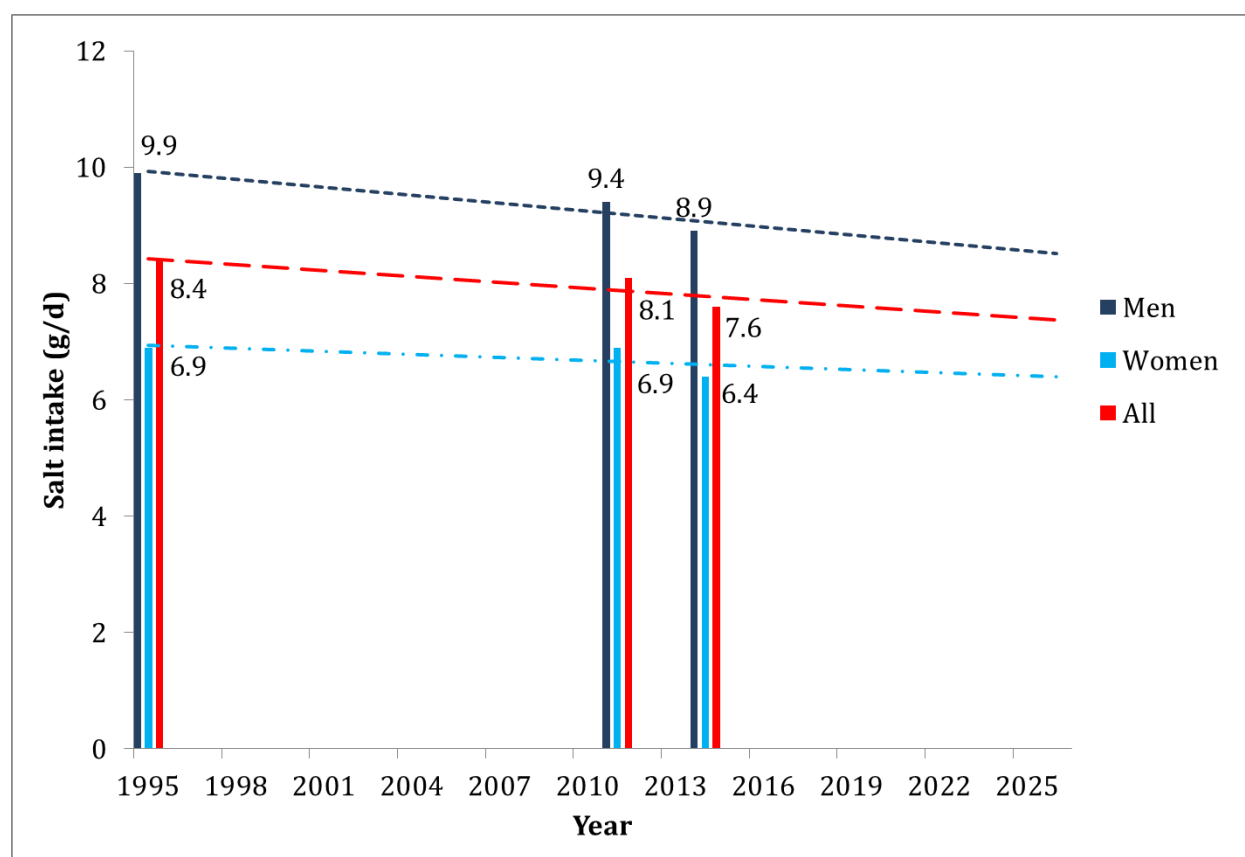
5.4 Policy initiatives to reduce salt intake of Australians

In 2009, the Federal Government launched its Food and Health Dialogue with a remit to improve the health of the Australian food supply through voluntary partnerships between the food industry, government and non-government public health organisations. In its first four years, this initiative resulted in the development of voluntary salt reduction targets for nine food categories. The targets adopted were less ambitious than those used internationally, and extending salt reduction targets to other food categories has been slow. In November 2015, this group was superseded by the Federal Government's Healthy Food Partnership, which includes government, industry and preventative health agencies to "work on strategies to educate consumers on fresh produce, appropriate portion sizes and accelerate efforts to reformulate foods to make it healthier." In July 2018, the Healthy Food Partnership's reformulation working group released a consultation on draft voluntary sodium content targets for 36 food categories which contribute the most salt to the Australian diet. The targets are expected to be finalised in early 2019.

In 2014, the Federal Government launched the Health Star Rating system. This front-of-pack labelling scheme uses stars to rate the nutritional profile of packaged foods, including sodium content, across a small number of food categories. The Healthy Food Partnership targets will complement the Health Star Ratings system, so there is renewed opportunity for a greater reduction of salt in processed foods.

There is strong consumer support for industry action to reduce salt in foods. Research commissioned in 2015 with 590 consumers revealed the majority of participants support industry-level change to reduce the salt content of processed foods and community education on salt reduction (Trieu & Webster, 2015). Research completed in 2015 with 2398 Victorian consumers revealed 61% supported regulation to limit the amount of salt added to manufactured foods. In a sub-sample of 837 parents, 81% believed more action is required to reduce the amount of salt in foods targeted at children (Grimes et al., 2017). Currently there is no parallel public awareness campaign to influence consumer behaviour relating to salt specifically and no agreed mechanism for monitoring national changes in salt intake. In 2015, VicHealth instigated a state-level partnership to advance action on salt reduction and launched its strategy, which may provide a model for further national action (Webster et al., 2015).

Figure 5.2: Trend in daily salt intake amongst men and women aged 18 years and over determined via 24-hour urine collections (Beard et al., 1997; Land, MA et al., 2014; Nowson et al., 2015)



5.5 Proposed Australian target, indicators and feasibility

Australia has signed up to the global targets of a 30% reduction in mean population salt intake, using the mean intakes in 2010 as a baseline. Whilst no national data for salt intakes in 2010 are available, the Victorian Health Monitor survey (2011) which showed the average daily salt intake in adults to be 8.1 grams per day provides a reasonable estimate of average intake (Figure 5.3) (Nowson et al., 2015).

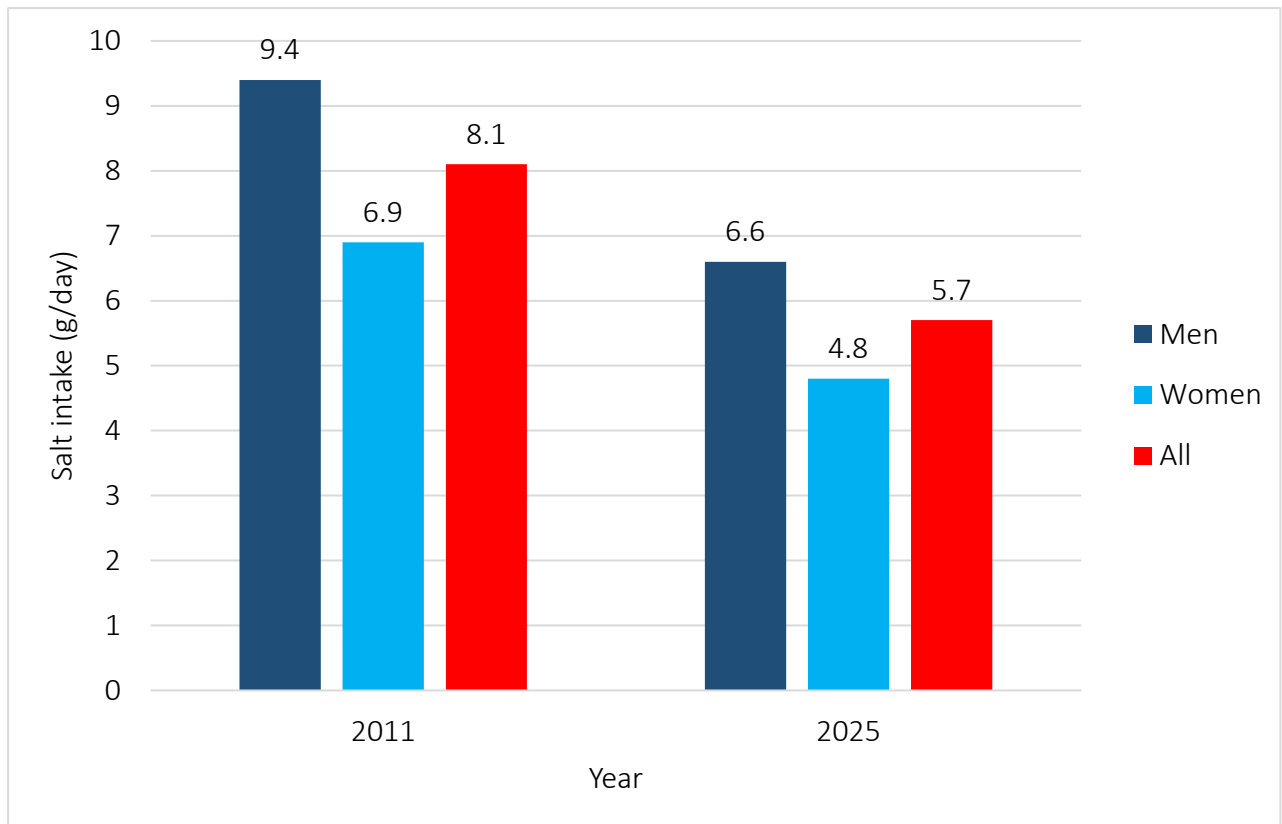
A 30% reduction on these intakes would equate to a mean daily reduction of 2.4 grams of salt for adults, which would result in a mean population salt intake of 5.7 grams. Achieving this level of salt reduction over a 10-year period is challenging but feasible.

The United Kingdom achieved a 15% reduction in population salt intake over the seven years from 2003 to 2014 (9.5 grams per day to 8.1 grams per day). This level of reduction was achieved on the back of a comprehensive salt reduction program which included:

- an overall population salt reduction target;
- the establishment of product specific targets for salt levels in foods that have been progressively lowered;
- a comprehensive and sustained government campaign to change consumer behaviour;
- clear labelling of the salt content of foods; and

- regular monitoring of salt intake and salt levels in foods (Charlton et al. 2014, He et al. 2014).

Figure 5.3: Baseline assessment of salt intake using data from men and women aged 25 to 78 years within the Victorian Health Monitor survey (2011) and the equivalent salt intake to be achieved by 2025



5.6 Discussion

Achieving the global target for salt reduction in Australia will be feasible but unlikely on current trends without concerted policy effort. The UK has demonstrated what can be achieved, and there are now many other countries implementing novel salt reduction strategies from which Australia can learn. It will require a concerted drive to increase consumer awareness and a comprehensive program of food reformulation that reduces the level of salt added to processed foods and meals. While there has been some progress through existing initiatives, efforts to reduce population salt intake require government leadership to bring together food industry, consumers and public health in collective action. Achieving the WHO target of a 30% reduction would result in 3,500 fewer deaths each year from strokes and heart attacks along with tens of millions of dollars of savings to the healthcare system.

The foundation of a policy and regulatory framework needs to be strengthened for a comprehensive approach to salt reduction in Australia. A responsive, regulatory approach should be introduced progressively to ensure Australia is on track to achieve the global salt reduction target, and is outlined in Appendix Two (at the end of this report).

The recent introduction of the national Health Star Rating System and the Healthy Food Partnership increases information to consumers on the salt content in processed foods. These initiatives need to be complemented by a well-resourced and sustained marketing campaign and supported by government initiatives to change consumer behaviour.

Together with a renewed commitment to reformulation and consumer education, a progressive approach to salt reduction in Australia will include a comprehensive program with regular and transparent monitoring of salt intake and salt levels in foods. This necessitates adequate government funding for implementation and monitoring. These initiatives will ensure that Australia is on track to achieve the global salt reduction target and thus reap the benefits of this cost-effective, efficient and equitable way to reduce the chronic disease burden in Australia over the next decade.

References

- Australia Institute of Health and Welfare. (2015). *Cardiovascular disease, diabetes and chronic kidney disease-Australian facts: risk factors*, National Centre for Monitoring Vascular Diseases
- Australian Bureau of Statistics. (2013). *Australian Health Survey: Updated Results, 2011-12*. Canberra: ABS Retrieved from <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/4364.0.55.003main+features12011-2012>.
- Australian Bureau of Statistics. (2015). *Australian Aboriginal and Torres Strait Islander Health Survey: Nutrition Results - Food and Nutrients* (cat. no. 4727.0.66.005). Canberra, ABS
- Australian Institute of Health and Welfare. (2005). *Health system expenditure on disease and injury in Australia 2000-01* Canberra, AIHW
- Australian Institute of Health and Welfare. (2012a). *Dementia in Australia*. Canberra, AIHW
- Australian Institute of Health and Welfare. (2012b). *Risk factors, diseases and deaths: high blood pressure*. Canberra, AIHW
- Beard, T. C., Woodward, D. R., Ball, P. J., Hornsby, H., von Witt, R. J., & Dwyer, T. (1997). The Hobart Salt Study: few meet national sodium intake target. *Medical Journal of Australia*, 166(8), 407-409.
- Cobiac, L. J., Magnus, A., Lim, S., Barendregt, J. J., Carter, R., & Vos, T. (2012). Which Interventions Offer Best Value for Money in Primary Prevention of Cardiovascular Disease? *Plos One*, 7(7), e41842. doi:10.1371/journal.pone.0041842
- Grimes, C. A., Riddell, L. J., Campbell, K. J., Beckford, K., Baxter, J. R., He, F. J., et al. (2017). Dietary intake and sources of sodium and potassium among Australian schoolchildren: results from the cross-sectional Salt and Other Nutrients in Children (SONIC) study. *BMJ Open*, 7(10), e016639. doi:10.1136/bmjopen-2017-016639
- Grimes, C. A., Szymlek-Gay, E. A., & Nowson, C. A. (2018). Trends in Dietary Sodium from Food Sources in Australian Children and Adolescents from 2007 to 2011/12. *J Acad Nutr Diet*, 118(7), 1183-1195.e1186. doi:10.1016/j.jand.2018.02.015
- He, F. J., & MacGregor, G. A. (2011). Salt reduction lowers cardiovascular risk: meta-analysis of outcome trials. *The Lancet*, 378(9789), 380-382. doi:10.1016/S0140-6736(11)61174-4
- James, W. P., Ralph, A., & Sanchez-Castillo, C. P. (1987). The dominance of salt in manufactured food in the sodium intake of affluent societies. *Lancet*, 1(8530), 426-429.
- Land, M.-A., Neal, B., Johnson, C., Nowson, C., Margerison, C., & Peterson, K. S. (2018). Salt consumption by Australian adults: a systematic review and meta-analysis. *Medical Journal of Australia*, 2018(2), 75-81.
- Land, M.-A., Webster, J., Christoforou, A., Praveen, D., Jeffery, P., Chalmers, J., et al. (2014). Salt intake assessed by 24 h urinary sodium excretion in a random and opportunistic sample in Australia. *BMJ Open*, 4(1). doi:10.1136/bmjopen-2013-003720
- Lindberg, R., Nichols, T., & Yam, C. (2017). The Healthy Eating Agenda in Australia. Is Salt a Priority for Manufacturers? *Nutrients*, 9(8). doi:10.3390/nu9080881

Nowson, C., Lim, K., Grimes, C., O'Halloran, S., Land, M. A., Webster, J., et al. (2015). Dietary Salt Intake and Discretionary Salt Use in Two General Population Samples in Australia: 2011 and 2014. *Nutrients*, 7(12), 10501-10512. doi:10.3390/nu7125545

Santos, J. A., Webster, J., Land, M.-A., Flood, V., Chalmers, J., Woodward, M., et al. (2017). Dietary salt intake in the Australian population. *Public Health Nutrition*, 20(11), 1887-1894. doi:10.1017/S1368980017000799

Trieu, K., & Webster, J. (2015). *Economic business case for salt reduction action in Victoria*. Sydney, World Health Organization Collaborating Centre on Population Salt Reduction, Food Policy Division, The George Institute for Global Health

Webster, J., Trieu, K., Dunford, E., Nowson, C., Jolly, K. A., Greenland, R., et al. (2015). Salt reduction in Australia: from advocacy to action. *Cardiovasc Diagn Ther*, 5(3), 207-218. doi:10.3978/j.issn.2223-3652.2015.04.02

6. Tobacco

Michelle Gooley and Mike Daube

Since 2015, we have:

Produced two national report cards highlighting smoking for specific cohorts; [Australia's Health Tracker by Socio-Economic Status](#) and [Australia's Physical and Mental Health Tracker](#)

This report has been produced as part of a project to tailor or develop chronic disease targets and indicators for Australia. This Working Group focused on tobacco use. The WHO targets and indicators and the Australian indicators relevant to tobacco are shown in Table 6.1:

Table 6.1: WHO tobacco target and indicators

Framework Element	Target	Relevant Australian indicators
Behavioural Risk Factors		
Tobacco	A 30% relative reduction in prevalence of current tobacco use in persons aged 15+ years	Adults: Age standardised prevalence of tobacco use among people aged 18 years and over Adolescents: Prevalence of current tobacco use among adolescents (10-19 years or according to country definition)

6.1 Key findings

- Although smoking in Australia has decreased over recent decades, in 2016, 12.2% of Australians continued to smoke daily.
- Some disadvantaged groups have a substantially higher smoking prevalence than the general population.
- Determined and sustained action is required to ensure that smoking prevalence in both adults and children continues to decline. While the WHO target for adolescents has been met, it is important that the decline continues. The WHO target for adults has not yet been reached. The Working Group suggests that the focus should be shifted to align with National Tobacco Strategy targets which are more directly appropriate to Australia than the WHO targets. The working group considers an appropriate population target is 5% of Australians continuing to smoke daily.
- Recommended policy actions incorporate a comprehensive approach, with continuing increases in tobacco taxation to make tobacco products more expensive; strong, well-funded and sustained media campaigns; minimising exposure to passive smoking; targeted interventions for vulnerable groups; comprehensive and fast tracked regulation on the contents of tobacco products; further curbs on tobacco industry promotion; updated health warnings; commitment to implementation of Article 5.3 of the Framework Convention on Tobacco Control (FCTC); enhanced health service encouragement and support for smokers to quit; and continuing research contributing to a strong evidence base for action.

- Vigilance is required to ensure that potential obstacles and disrupters to the continued reduction of smoking are addressed.
- Data relating to tobacco use could be strengthened in Australia by improving their reliability in relation to vulnerable populations and increasing availability of indicators of government activity.

6.2 Introduction

Tobacco smoking is Australia's leading preventable cause of death and disease (Begg et al., 2007), estimated to cause the deaths of almost 19,000 Australians annually (Australian Institute of Health and Welfare, 2016b). Approximately two thirds of regular Australian smokers are likely to die as a result of their smoking (Banks et al. 2015). The total cost of smoking in Australia was estimated to be \$31.5 billion in 2004– 05 (Collins & Lapsley, 2008) and is now likely to be considerably higher.

Over recent decades, there has been a significant decline in the prevalence of smoking in Australia in both adults and children (Department of Health 2018). Contributors to this decline have included a series of tobacco control measures such as bans on tobacco advertising and promotion (including at point of sale), tobacco tax increases, strong public education/mass media programs, smoke-free measures, graphic health warnings and plain packaging, and continuing advocacy and mass media coverage of the harms of smoking. Australia is recognised as a world leader in tobacco control. It is important to recognise that this has occurred as a result of great commitment and collaborative approaches by many groups over many years.

Most recent data from the National Drug Strategy Household Survey suggests that the rate of decline in smoking may have slowed between 2013 and 2016 - in 2016, the proportion of daily smokers amongst those aged 14 or older was 12.2% (Australian Institute of Health and Welfare, 2017); in 2013 it was 12.8% (see Figure 6.1). However, there are more encouraging indications particularly in preventing the uptake in smoking among adolescents period (Australian Institute of Health and Welfare, 2014; Greenhalgh et al., 2019), and most recently industry data (Business Wire, 2018), which do not suggest the same slowing. It is, however, of significant concern that governmental action on smoking during this period has not kept pace with that of previous years, particularly in relation to mass media campaigns and tobacco industry/product regulation, and considerable inequities in smoking prevalence continue to exist, with some disadvantaged populations having substantially higher smoking prevalence than the general population. For example, Aboriginal and Torres Strait Islander people (15 years and over) report a high prevalence of daily smoking, at 41% (Australian Bureau of Statistics (ABS), 2016). Other groups with relatively high rates of smoking include those who live in the lowest socioeconomic areas and those who live in remote/very remote areas (17.1% and 21% current smoker prevalence respectively) (Australian Institute of Health and Welfare, 2017), however these have shown some reduction in the last 3 years.

Australia has a substantial array of high-quality data used to track trends in tobacco use (ANPHA 2013a) (Australian Institute of Health and Welfare, 2016a). The following would further strengthen our ability to measure activity and tobacco use:

- More reliable data on vulnerable populations (such as those with mental health conditions);
- Indicators of government activity across national and State/Territory governments and all agencies (i.e. not only Health); and
- Ensuring there is an adequate baseline for judging progress – despite the amount of robust data available, it is not always available for use or accessible in a timely manner.

6.3 Relevance of WHO targets

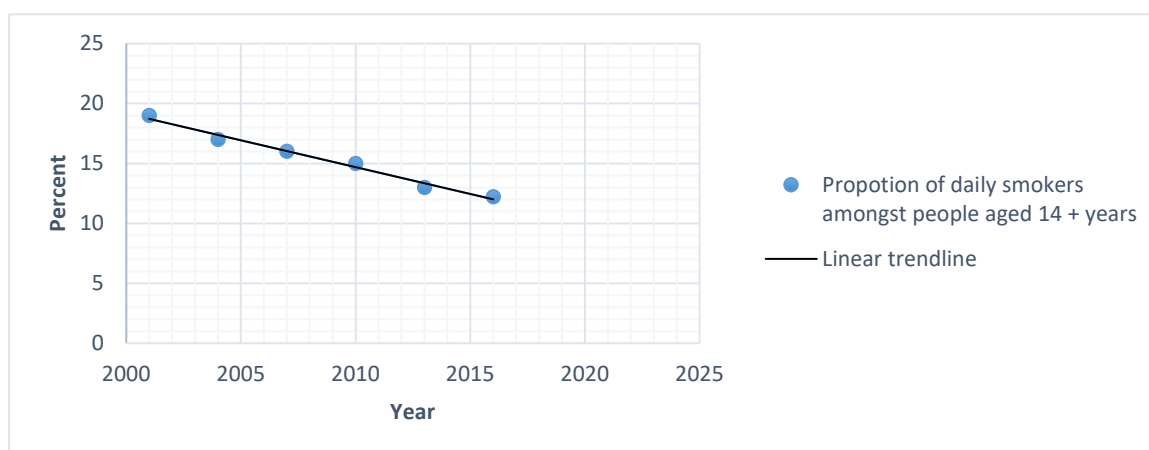
The Working Group considers the WHO target to be useful as a starting point, however there is a need to recognise that more ambitious targets will be more appropriate for Australia. The target set by the National Tobacco Strategy (NTS) in 2012 is to reduce the national adult daily smoking rate to 10 per cent of the population by 2018 (Intergovernmental Committee on Drugs, 2012) with an additional target to halve the Aboriginal and Torres Strait Islander adult daily smoking rate. Progress against this target is currently being reviewed and new targets are to be set by the end of the year.

6.4 Proposed Australian target and indicators and feasibility

Previously, the Tobacco Working Group has adopted the WHO target – that is, a 30% relative reduction in prevalence of current tobacco use in persons aged 18+ years between 2010 and 2025, with an adjustment: the population group to be used was 14+ years. This population was chosen because it is measured as part of the National Drug Strategy Household Survey, which is the leading survey of drug use in Australia and has been conducted every three years since 1995. It was most recently updated in 2016 (Australian Institute of Health and Welfare, 2017).

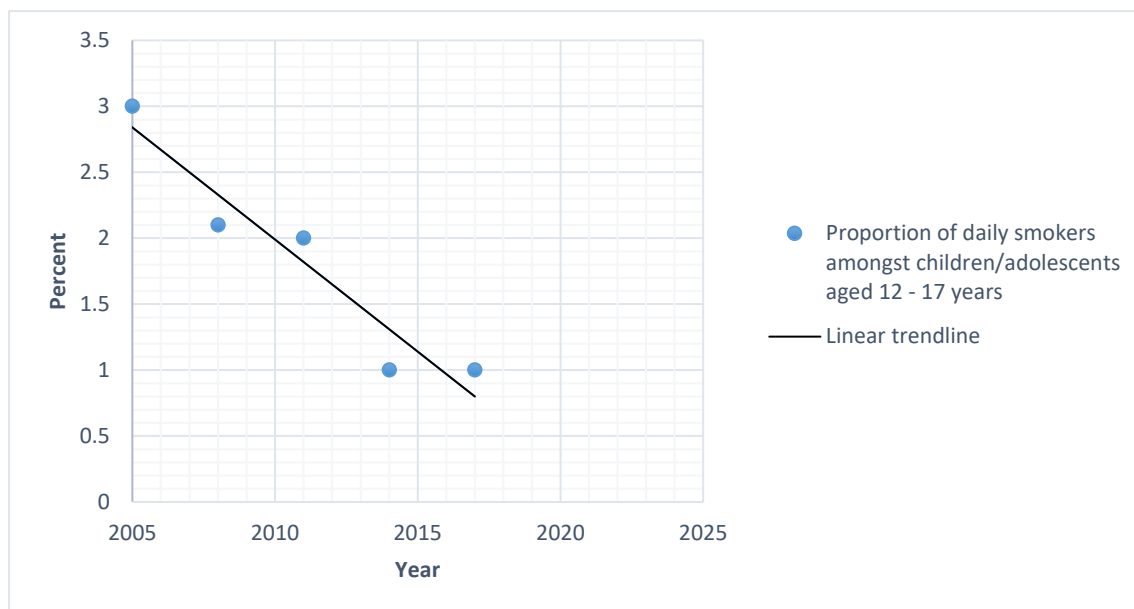
In November 2016, the Working Group revised the smoking target to 5% or less daily smoking prevalence by 2025. The group believes that the effect of implementing evidence-based policies and programs is significantly changing smoking behaviours that underpin prevalence. These changes in behaviour will drive further significant reductions in smoking prevalence over the next decade.

Figure 6.1: Prevalence of daily smoking among Australian aged 14 years and above with linear trend indicated.



The Working Group also believes that it is important to monitor the smoking prevalence of children and adolescents over this timeframe. The previously proposed indicator is the daily smoking rate of children and adolescents aged 12–17 years as measured by the Australian Secondary Students’ Alcohol and Drug survey (ASSAD). In the 2017 survey, the daily smoking prevalence (in the seven days prior to the survey) for children and adolescents aged 12–17 years was 1%; it was also 1% in 2014 and has decreased from 2% in 2011, a statistically significant difference compared to 2017 ($p < 0.01$) (Guerin & White, 2018). Therefore, a 30% relative reduction in smoking prevalence based on the 2011 prevalence (2010 data is not available) equates to a prevalence of 1.4% in 2025⁹. Based on the current data, Australia is on track to reaching the 2025 target.

Figure 6.2: Prevalence of daily smoking among Australian children and adolescents aged 12–17 years and above, with linear trend indicated.



Data source: Prevalence data from 2005 – 2017 (ASSAD)

⁹ A target of 1.4% has been updated from the 1.3% 2025 target set in the 2015 Targets and Indicators report.

However, there is no room for complacency. Determined and sustained action is required to maintain momentum towards reducing smoking amongst all Australians and especially amongst our most vulnerable populations, and to ensure that encouraging trends among children and adolescents are sustained. The Working Group suggests that the NTS targets are adopted as the tobacco targets in Australia for the following reasons:

1. The current NTS has been endorsed by federal, state and territory health ministers and is a well accepted policy framework for both governments and non government agencies to reduce the prevalence of smoking
2. Thus the adoption of the NTS targets by AHPC will ensure that advocacy efforts are consistent with smoking cessation goals other health organisations are already moving towards
3. The NTS targets are more relevant in an Australian context than the WHO targets; Australia is a world leader in reducing smoking and a more progressive target should be adopted to maintain the urgency and impetus for further action
4. The NTS has a specific target for Aboriginal and Torres Strait Islander people
5. If the NTS targets are achieved, the WHO target will also be comfortably achieved

6.5 Discussion

The Tobacco Working Group endorses the overarching principles articulated within the National Tobacco Strategy (NTS) (Intergovernmental Committee on Drugs, 2012) and by the National Preventative Health Taskforce (NPHT) (National Preventative Health Taskforce, 2009) for the continued reduction of tobacco use in Australia. These areas for action are consistent with the WHO MPOWER measures, which are designed to assist the effective implementation of tobacco control at a country level (World Health Organization, 2013).

Both the NTS and the NPHT emphasise that certain populations – such as Aboriginal and Torres Strait Islander people, people with mental illnesses and people from low socioeconomic areas – are priority groups and will require attention and support to complement other measures in the recommended comprehensive approach. It is noted that a smoking reduction target has been recommended specifically for Australian adults with a mental illness (Expert Reference Group to COAG Working Group on Mental Health Reform, 2013).

In 2016, excise taxes in Australia contributed around 51% of the cost of a packet, less than in many other countries including New Zealand (estimated 62%) and Finland (estimated 66%) (World Health Organization, 2017). Following further annual 12.5% increases in customs/excise duty between September 2016 and September 2018, total excise taxes on a typical pack of cigarettes in Australia in early 2019 was an estimated 53%. Including GST (10% of the pre-retail price), total taxes (customs/excise duty plus GST) made up 60% of the price of a typical pack of cigarettes in 2016 and 62% in early 2019 (Greenhalgh et al., 2019). The Director-General of the WHO, has stated that “raising taxes on tobacco products is one of the most effective – and cost-effective – ways to reduce consumption of products that kill” (World Health Organization, 2015), highlighting the critical importance of price in reducing smoking, and reducing tobacco-related inequities (Hill et al., 2014; Hiscock et al., 2012; Thomas et al., 2008). In Australia, there have been regular annual increases in excise tobacco tax since 2013: these are planned to continue until 2020.

It is important that momentum towards further reduction in smoking prevalence is regained, including amongst disadvantaged groups. Whilst the Working Group strongly advocates continuing increases in tobacco taxation to increase the cost of cigarettes in Australia, price rises alone are not sufficient, and need to be complemented by other measures. Further action is required to maintain progress.

Health professionals have an important role to play in supporting smokers to quit. Smokers are willing to discuss quitting with their general practitioner, however, health professionals rarely refer smokers to behaviour-change coaching or discuss the efficacy of smoking cessation medications (White, 2018). Thus, the Working Group recommends that smoking cessation advice and support be provided as part of routine healthcare with strong health system support. Health system support for smoking cessation could be strengthened by requiring health departments and healthcare services to incorporate measurable smoking cessation-related key performance indicators; these indicators should include not just the general population but also priority and vulnerable groups.

The measures currently in place to regulate the contents of tobacco products and disclosure of ingredients (World Health Organization, 2014) are very limited in scope. Weaknesses in the current approach include absence of controls on added flavourings, scents and additives, such as menthol, used to make tobacco products more palatable and attractive to children and novice smokers, independent testing of tobacco product ingredients and clear and appropriate provision of information (for example, words such as ‘organic’ or ‘natural’ may be misinterpreted as the product being less harmful (Byron et al., 2016). Flavour capsule cigarettes that release flavour and aroma after the user “pops” small capsules contained within the cigarettes are increasing in popularity globally (Moodie et al., 2018) and are more commonly favoured amongst young smokers compared to older smokers in Australia, UK and

USA (Moodie et al., 2018; Thrasher et al., 2016). Regulation on the contents of tobacco products should be fast-tracked and comprise a comprehensive suite of regulatory controls on product ingredients supported by an appropriate system for measuring, testing and reporting on the contents and emissions of tobacco products. The Working Group stressed that this should be done by government, without tobacco industry involvement, and with any public information coming from government, not tobacco companies.

E-cigarettes are battery-powered devices, which produce a vapour for inhalation. Nicotine-containing e-cigarettes are not currently available for sale in Australia, although importation for personal use is possible within specific regulations. The proportion of Australians currently using e-cigarettes is estimated to be 1.2% of people aged 14 and over, however the proportion is higher amongst smokers – 4.4% (AIHW, 2017). Of note, e-cigarette use is most common among younger smokers (aged 18–24) – 6.8% report current use (Australian Institute of Health and Welfare, 2017). The 2017 ASSAD report showed that around 13% of surveyed Australian 12 to 17 year old school students indicated that they had ever used an e-cigarette (Guerin & White, 2018).

The Working Group supports the precautionary position of the Ministerial Drug and Alcohol Forum, including Ministers from all Australian jurisdictions with responsibility for alcohol and other drugs and justice/law enforcement, with regards to e-cigarettes (Department of Health, n.d.). A recent report produced by the CSIRO has highlighted evidence gaps regarding the use and potential for adverse health effects of e-cigarettes (Byrne et al., 2018). Of note, evidence supporting e-cigarettes as a smoking cessation method at the population level is limited (Byrne et al., 2018). There are also concerns that e-cigarette use by non-smoking youths may lead to future smoking and harmful effects among young users (Byrne et al., 2018; Kounang, 2019; U.S. Department of Health and Human Services, 2018). A recent Australian survey of students aged 12-17 suggests that compared with those who have never tried an e-cigarette, students who have experimented with e-cigarettes are more likely to subsequently try tobacco cigarettes (Guerin & White, 2018). E-cigarettes are also associated with specific harms associated with device explosion and ingestion of e-fluids (National Health and Medical Research Council, 2017).

The Working Group noted the value of continuing research in ensuring that future action to reduce smoking is evidence-based. They noted an Australian developed tobacco research agenda (ANPHA 2013b), with scope for further work also including exploring the cost of pharmaceutical cessation aids compared to other methods for quitting.

The Working Group noted that there are important current and potential obstacles and disrupters to the continued reduction of smoking:

- The tobacco industry, associated lobbyists and supporters have been and will continue to be significant disrupters to tobacco control efforts, seeking to oppose and undermine any effective tobacco control measures and to promote both their own products and ineffective and counterproductive alternative approaches. On the basis of experience over time and recently, the industry can be expected to employ strategies including:
 - lobbying and public relations activities; political donations;
 - support for industry groups and private “think tanks”;
 - legal processes at state, national and international levels;
 - false and misleading claims about possible negative impacts of tobacco control measures such as price or plain packaging; and
 - price and product manipulation.
- As Australia is a signatory to article 5.3 of the WHO’s Framework Convention on Tobacco Control which calls for protection of tobacco control public health policies from “commercial and other vested interests of the tobacco industry” (World Health Organization, 2003), action should be considered to end all tobacco industry lobbying and public relations activities”.
- Insufficient government commitment to mass media activity despite compelling evidence of the importance of this component of the strategy (summarised by the NTS position that “mass media campaigns are highly effective components of tobacco control programs, second only to price increases”).
- It is vital to ensure a strong focus on reducing smoking among disadvantaged groups such as people with mental illness, Aboriginal and Torres Strait Islander people and people with low socioeconomic status.
- Increasing concerns about tobacco industry involvement in and promotion of alternative nicotine delivery products, including e-cigarettes, both to maintain and renormalise smoking behaviour, and to circumvent Article 5.3 of the Framework Convention on Tobacco Control (World Health Organization, 2003).
- A perception that tobacco has been “done” – when it remains the major preventable cause of death and disease globally (Dobbs et al., 2014).

Therefore, the Working Group strongly believes there must be a renewed sense of urgency around action on tobacco control across all governments, health departments and all other relevant government agencies, as well as among health organisations and the wider community.

6.6 Key data sources

Report title	Web reference
National Drug Strategy Household Survey 2016, detailed findings	https://www.aihw.gov.au/reports/illicit-use-of-drugs/2016-ndshs-detailed/contents/table-of-contents
Australian secondary school students' use of tobacco, alcohol, and over-the counter and illicit substances in 2017	http://www.nationaldrugstrategy.gov.au/internet/drugstrategy/Publishing.nsf/content/E9E2B337CF94143CCA25804B0005BEAA/\$File/ASSAD2017-National-Report-FINAL.pdf
Tobacco Indicators Baseline Data: Reporting under the National Tobacco Strategy 2012-2018	https://www.aihw.gov.au/reports/smoking/tobacco-indicators-baseline-data-reporting-under/contents/table-of-contents

References

- Australian Bureau of Statistics (ABS). (2016). *National Aboriginal and Torres Strait Islander Social Survey 2014/15*. Canberra, ABS
- Australian Institute of Health and Welfare. (2014). *National Drug Strategy Household Survey detailed report: 2013*. Canberra, AIHW
- Australian Institute of Health and Welfare. (2016a). *Australia's Health 2016*. Canberra, AIHW
- Australian Institute of Health and Welfare. (2016b). *Australian Burden of Disease Study: Impact and causes of illness and death in Australia 2011*. . Canberra, AIHW
- Australian Institute of Health and Welfare. (2017). *National Drug Strategy Household Survey 2016: detailed findings*. Canberra, AIHW
- Begg, S., Vos, T., Barker, K., Stevenson, C., Stanley, L., & Lopez, A. (2007). *The burden of disease and injury in Australia 2003*. Canberra: AIHW.
- Business Wire. (2018). Philip Morris International Inc. (PMI) Reports 2018 Second Quarter Results. Retrieved from <https://www.businesswire.com/news/home/20180719005305/en/Philip-Morris-International-PMI-Reports-2018-Second-Quarter>
- Byrne, S., Brindal, E., Williams, G., Anastasiou, K., Tonkin, A., S, B., et al. (2018). *E-cigarettes, smoking and health. A Literature Review UPdate*. Australia, CSIRO
- Byron, M. J., Baig, S. A., Moracco, K. E., & Brewer, N. T. (2016). Adolescents' and adults' perceptions of 'natural', 'organic' and 'additive-free' cigarettes, and the required disclaimers. *Tob Control*, 25(5), 517-520. doi:10.1136/tobaccocontrol-2015-052560
- Collins, D., & Lapsley, H. (2008). *The Cost of Tobacco, Alcohol and Illicit Durg Abuse to Australian Society in 2004/05*. Retrieved from <http://www.health.gov.au/internet/drugstrategy/publishing.nsf/Content/mono64>.
- Department of Health. (n.d.). *Ministerial Drug and Alcohol Forum (MDAF) Communiqué 27 November 2017*,
- Dobbs, R., Sawers, C., Thompson, F., Manyika, J., Woetzel, J., Child, P., et al. (2014). *Overcoming obesity: An initial economic analysis*, McKinsey Global Institute
- Expert Reference Group to COAG Working Group on Mental Health Reform. (2013). *Final Report: Expert Reference Group to COAG Working Group on Mental Health Reform on National Targets and Indicators for mental health reform*,
- Greenhalgh, E., Bayley, M., & Winstanley, M. H. (2019). *Tobacco in Australia: Factors and Issues*. Melbourne: Cancer Council Victoria.
- Guerin, N., & White, V. (2018). *ASSAD 2017 Statistics & Trends: Australian Secondary Students' Use of Tobacco, Alcohol, Over-the-counter Drug, and Illicit Substances*, Cancer Council Victoria
- Hill, S., Amos, A., Clifford, D., & Platt, S. (2014). Impact of tobacco control interventions on socioeconomic inequalities in smoking: review of the evidence. *Tob Control*, 23(e2), e89-97. doi:10.1136/tobaccocontrol-2013-051110

Hiscock, R., Bauld, L., Amos, A., Fidler, J. A., & Munafò, M. (2012). Socioeconomic status and smoking: a review. *Ann N Y Acad Sci*, 1248, 107-123. doi:10.1111/j.1749-6632.2011.06202.x

Intergovernmental Committee on Drugs. (2012). *National Tobacco Strategy 2012-2018*. Canberra, Commonwealth of Australia

Koung, N. (2019). Skyrocketing teen e-cig use erases recent declines in youth tobacco use. 11 February 2019. Retrieved from <https://edition.cnn.com/2019/02/11/health/cdc-teen-tobacco-declines-erased-vaping/index.html>

Moodie, C., Thrasher, J. F., Cho, Y. J., Barnoya, J., & Chaloupka, F. J. (2018). Flavour capsule cigarettes continue to experience strong global growth. *Tobacco Control*, tobaccocontrol-2018-054711. doi:10.1136/tobaccocontrol-2018-054711

National Health and Medical Research Council. (2017). *CEO Statement: Electronic cigarettes*. Canberra, NHMRC

National Preventative Health Taskforce. (2009). *Australia: The Healthiest Country by 2020 - National Preventative Health Strategy – the Roadmap for Action*. Canberra, Department of Health

Thomas, S., Fayter, D., Misso, K., Ogilvie, D., Petticrew, M., Sowden, A., et al. (2008). Population tobacco control interventions and their effects on social inequalities in smoking: systematic review. *Tobacco Control*, 17(4), 230-237. doi:10.1136/tc.2007.023911

Thrasher, J. F., Abad-Vivero, E. N., Moodie, C., O'Connor, R. J., Hammond, D., Cummings, K. M., et al. (2016). Cigarette brands with flavour capsules in the filter: trends in use and brand perceptions among smokers in the USA, Mexico and Australia, 2012-2014. *Tob Control*, 25(3), 275-283. doi:10.1136/tobaccocontrol-2014-052064

U.S. Department of Health and Human Services. (2018). Surgeon General's Advisory on E-cigarette Use Among Youth. Retrieved from <https://e-cigarettes.surgeongeneral.gov/documents/surgeon-generals-advisory-on-e-cigarette-use-among-youth-2018.pdf>

White, S. (2018). Smoker's aren't getting all the help they need to quit [Press release]

World Health Organization. (2003). *WHO Framework Convention on Tobacco Control*. Geneva, WHO

World Health Organization. (2013). Tobacco Free Initiative (TFI): MPOWER. Retrieved from <https://www.who.int/tobacco/mpower/en/>

World Health Organization. (2014). *Australian progress report on Implementation of the Framework Convention on Tobacco Control 2014*,

World Health Organization. (2015). *The economic and health benefits of tobacco taxation*. Geneva, WHO

World Health Organization. (2017). *Table 9.5.0 in Appendix IX WHO report on the global tobacco epidemic 2017*. Geneva, WHO

Australian Bureau of Statistics (ABS). (2016). *National Aboriginal and Torres Strait Islander Social Survey 2014/15*. Canberra, ABS

- Australian Institute of Health and Welfare. (2014). *National Drug Strategy Household Survey detailed report: 2013*. Canberra, AIHW
- Australian Institute of Health and Welfare. (2016a). *Australia's Health 2016*. Canberra, AIHW
- Australian Institute of Health and Welfare. (2016b). *Australian Burden of Disease Study: Impact and causes of illness and death in Australia 2011*. . Canberra, AIHW
- Australian Institute of Health and Welfare. (2017). *National Drug Strategy Household Survey 2016: detailed findings*. Canberra, AIHW
- Begg, S., Vos, T., Barker, K., Stevenson, C., Stanley, L., & Lopez, A. (2007). *The burden of disease and injury in Australia 2003*. Canberra: AIHW.
- Business Wire. (2018). Philip Morris International Inc. (PMI) Reports 2018 Second Quarter Results. Retrieved from <https://www.businesswire.com/news/home/20180719005305/en/Philip-Morris-International-PMI-Reports-2018-Second-Quarter>
- Byrne, S., Brindal, E., Williams, G., Anastasiou, K., Tonkin, A., S, B., et al. (2018). *E-cigarettes, smoking and health. A Literature Review UPdate*. Australia, CSIRO
- Byron, M. J., Baig, S. A., Moracco, K. E., & Brewer, N. T. (2016). Adolescents' and adults' perceptions of 'natural', 'organic' and 'additive-free' cigarettes, and the required disclaimers. *Tob Control*, 25(5), 517-520. doi:10.1136/tobaccocontrol-2015-052560
- Collins, D., & Lapsley, H. (2008). *The Cost of Tobacco, Alcohol and Illicit Durg Abuse to Australian Society in 2004/05*. Retrieved from <http://www.health.gov.au/internet/drugstrategy/publishing.nsf/Content/mono64>.
- Department of Health. (n.d.). *Ministerial Drug and Alcohol Forum (MDAF) Communiqué 27 November 2017*,
- Dobbs, R., Sawers, C., Thompson, F., Manyika, J., Woetzel, J., Child, P., et al. (2014). *Overcoming obesity: An initial economic analysis*, McKinsey Global Institute
- Expert Reference Group to COAG Working Group on Mental Health Reform. (2013). *Final Report: Expert Reference Group to COAG Working Group on Mental Health Reform on National Targets and Indicators for mental health reform*,
- Greenhalgh, E., Bayley, M., & Winstanley, M. H. (2019). *Tobacco in Australia: Factors and Issues*. Melbourne: Cancer Council Victoria.
- Guerin, N., & White, V. (2018). *ASSAD 2017 Statistics & Trends: Australian Secondary Students' Use of Tobacco, Alcohol, Over-the-counter Drug, and Illicit Substances*, Cancer Council Victoria
- Hill, S., Amos, A., Clifford, D., & Platt, S. (2014). Impact of tobacco control interventions on socioeconomic inequalities in smoking: review of the evidence. *Tob Control*, 23(e2), e89-97. doi:10.1136/tobaccocontrol-2013-051110
- Hiscock, R., Bauld, L., Amos, A., Fidler, J. A., & Munafo, M. (2012). Socioeconomic status and smoking: a review. *Ann N Y Acad Sci*, 1248, 107-123. doi:10.1111/j.1749-6632.2011.06202.x

Intergovernmental Committee on Drugs. (2012). *National Tobacco Strategy 2012-2018*. Canberra, Commonwealth of Australia

Kounang, N. (2019). Skyrocketing teen e-cig use erases recent declines in youth tobacco use. 11 February 2019. Retrieved from <https://edition.cnn.com/2019/02/11/health/cdc-teen-tobacco-declines-erased-vaping/index.html>

Moodie, C., Thrasher, J. F., Cho, Y. J., Barnoya, J., & Chaloupka, F. J. (2018). Flavour capsule cigarettes continue to experience strong global growth. *Tobacco Control*, tobaccocontrol-2018-054711. doi:10.1136/tobaccocontrol-2018-054711

National Health and Medical Research Council. (2017). *CEO Statement: Electronic cigarettes*. Canberra, NHMRC

National Preventative Health Taskforce. (2009). *Australia: The Healthiest Country by 2020 - National Preventative Health Strategy – the Roadmap for Action*. Canberra, Department of Health

Thomas, S., Fayter, D., Misso, K., Ogilvie, D., Petticrew, M., Sowden, A., et al. (2008). Population tobacco control interventions and their effects on social inequalities in smoking: systematic review. *Tobacco Control*, 17(4), 230-237. doi:10.1136/tc.2007.023911

Thrasher, J. F., Abad-Vivero, E. N., Moodie, C., O'Connor, R. J., Hammond, D., Cummings, K. M., et al. (2016). Cigarette brands with flavour capsules in the filter: trends in use and brand perceptions among smokers in the USA, Mexico and Australia, 2012-2014. *Tob Control*, 25(3), 275-283. doi:10.1136/tobaccocontrol-2014-052064

U.S. Department of Health and Human Services. (2018). Surgeon General's Advisory on E-cigarette Use Among Youth. Retrieved from <https://e-cigarettes.surgeongeneral.gov/documents/surgeon-generals-advisory-on-e-cigarette-use-among-youth-2018.pdf>

White, S. (2018). Smoker's aren't getting all the help they need to quit [Press release]

World Health Organization. (2003). *WHO Framework Convention on Tobacco Control*. Geneva, WHO

World Health Organization. (2013). Tobacco Free Initiative (TFI): MPOWER. Retrieved from <https://www.who.int/tobacco/mpower/en/>

World Health Organization. (2014). *Australian progress report on Implementation of the Framework Convention on Tobacco Control 2014*,

World Health Organization. (2015). *The economic and health benefits of tobacco taxation*. Geneva, WHO

World Health Organization. (2017). *Table 9.5.0 in Appendix IX WHO report on the global tobacco epidemic 2017*. Geneva, WHO

Australian Bureau of Statistics (ABS). (2016). *National Aboriginal and Torres Strait Islander Social Survey 2014/15*. Canberra, ABS

Australian Institute of Health and Welfare. (2014). *National Drug Strategy Household Survey detailed report: 2013*. Canberra, AIHW

Australian Institute of Health and Welfare. (2016). *Australian Burden of Disease Study: Impact and causes of illness and death in Australia 2011*. Canberra, AIHW

Australian Institute of Health and Welfare. (2017). *National Drug Strategy Household Survey 2016: detailed findings*. Canberra, AIHW

Begg, S., Vos, T., Barker, K., Stevenson, C., Stanley, L., & Lopez, A. (2007). *The burden of disease and injury in Australia 2003*. Canberra: AIHW.

Business Wire. (2018). Philip Morris International Inc. (PMI) Reports 2018 Second Quarter Results. Retrieved from <https://www.businesswire.com/news/home/20180719005305/en/Philip-Morris-International-PMI-Reports-2018-Second-Quarter>

Byrne, S., Brindal, E., Williams, G., Anastasiou, K., Tonkin, A., S, B., et al. (2018). *E-cigarettes, smoking and health. A Literature Review UPdate*. Australia, CSIRO

Byron, M. J., Baig, S. A., Moracco, K. E., & Brewer, N. T. (2016). Adolescents' and adults' perceptions of 'natural', 'organic' and 'additive-free' cigarettes, and the required disclaimers. *Tob Control*, 25(5), 517-520. doi:10.1136/tobaccocontrol-2015-052560

Collins, D., & Lapsley, H. (2008). *The Cost of Tobacco, Alcohol and Illicit Drug Abuse to Australian Society in 2004/05*. Retrieved from <http://www.health.gov.au/internet/drugstrategy/publishing.nsf/Content/mono64>.

Department of Health. (n.d.). *Ministerial Drug and Alcohol Forum (MDAF) Communiqué 27 November 2017*,

Dobbs, R., Sawers, C., Thompson, F., Manyika, J., Woetzel, J., Child, P., et al. (2014). *Overcoming obesity: An initial economic analysis*, McKinsey Global Institute

Expert Reference Group to COAG Working Group on Mental Health Reform. (2013). *Final Report: Expert Reference Group to COAG Working Group on Mental Health Reform on National Targets and Indicators for mental health reform*,

Greenhalgh, E., Bayley, M., & Winstanley, M. H. (2019). *Tobacco in Australia: Factors and Issues*. Melbourne: Cancer Council Victoria.

Guerin, N., & White, V. (2018). *ASSAD 2017 Statistics & Trends: Australian Secondary Students' Use of Tobacco, Alcohol, Over-the-counter Drug, and Illicit Substances*, Cancer Council Victoria

Hill, S., Amos, A., Clifford, D., & Platt, S. (2014). Impact of tobacco control interventions on socioeconomic inequalities in smoking: review of the evidence. *Tob Control*, 23(e2), e89-97. doi:10.1136/tobaccocontrol-2013-051110

Hiscock, R., Bauld, L., Amos, A., Fidler, J. A., & Munafo, M. (2012). Socioeconomic status and smoking: a review. *Ann N Y Acad Sci*, 1248, 107-123. doi:10.1111/j.1749-6632.2011.06202.x

Intergovernmental Committee on Drugs. (2012). *National Tobacco Strategy 2012-2018*. Canberra, Commonwealth of Australia

Kounang, N. (2019). Skyrocketing teen e-cig use erases recent declines in youth tobacco use. 11 February 2019. Retrieved from <https://edition.cnn.com/2019/02/11/health/cdc-teen-tobacco-declines-erased-vaping/index.html>

Moodie, C., Thrasher, J. F., Cho, Y. J., Barnoya, J., & Chaloupka, F. J. (2018). Flavour capsule cigarettes continue to experience strong global growth. *Tobacco Control*, tobaccocontrol-2018-054711. doi:10.1136/tobaccocontrol-2018-054711

National Health and Medical Research Council. (2017). *CEO Statement: Electronic cigarettes*. Canberra, NHMRC

National Preventative Health Taskforce. (2009). *Australia: The Healthiest Country by 2020 - National Preventative Health Strategy – the Roadmap for Action*. Canberra, Department of Health

Thomas, S., Fayter, D., Misso, K., Ogilvie, D., Petticrew, M., Sowden, A., et al. (2008). Population tobacco control interventions and their effects on social inequalities in smoking: systematic review. *Tobacco Control*, 17(4), 230-237. doi:10.1136/tc.2007.023911

Thrasher, J. F., Abad-Vivero, E. N., Moodie, C., O'Connor, R. J., Hammond, D., Cummings, K. M., et al. (2016). Cigarette brands with flavour capsules in the filter: trends in use and brand perceptions among smokers in the USA, Mexico and Australia, 2012-2014. *Tob Control*, 25(3), 275-283. doi:10.1136/tobaccocontrol-2014-052064

U.S. Department of Health and Human Services. (2018). Surgeon General's Advisory on E-cigarette Use Among Youth. Retrieved from <https://e-cigarettes.surgeongeneral.gov/documents/surgeon-generals-advisory-on-e-cigarette-use-among-youth-2018.pdf>

White, S. (2018). Smoker's aren't getting all the help they need to quit [Press release]

World Health Organization. (2003). *WHO Framework Convention on Tobacco Control*. Geneva, WHO

World Health Organization. (2013). Tobacco Free Initiative (TFI): MPOWER. Retrieved from <https://www.who.int/tobacco/mpower/en/>

World Health Organization. (2014). *Australian progress report on Implementation of the Framework Convention on Tobacco Control 2014*,

World Health Organization. (2015). *The economic and health benefits of tobacco taxation*. Geneva, WHO

World Health Organization. (2017). *Table 9.5.0 in Appendix IX WHO report on the global tobacco epidemic 2017*. Geneva, WHO

Australian Bureau of Statistics (ABS). (2016). *National Aboriginal and Torres Strait Islander Social Survey 2014/15*. Canberra, ABS

Australian Institute of Health and Welfare. (2014). *National Drug Strategy Household Survey detailed report: 2013*. Canberra, AIHW

Australian Institute of Health and Welfare. (2016). *Australian Burden of Disease Study: Impact and causes of illness and death in Australia 2011*. . Canberra, AIHW

- Australian Institute of Health and Welfare. (2017). *National Drug Strategy Household Survey 2016: detailed findings*. Canberra, AIHW
- Begg, S., Vos, T., Barker, K., Stevenson, C., Stanley, L., & Lopez, A. (2007). *The burden of disease and injury in Australia 2003*. Canberra: AIHW.
- Business Wire. (2018). Philip Morris International Inc. (PMI) Reports 2018 Second Quarter Results. Retrieved from <https://www.businesswire.com/news/home/20180719005305/en/Philip-Morris-International-PMI-Reports-2018-Second-Quarter>
- Byrne, S., Brindal, E., Williams, G., Anastasiou, K., Tonkin, A., S, B., et al. (2018). *E-cigarettes, smoking and health. A Literature Review UPdate*. Australia, CSIRO
- Byron, M. J., Baig, S. A., Moracco, K. E., & Brewer, N. T. (2016). Adolescents' and adults' perceptions of 'natural', 'organic' and 'additive-free' cigarettes, and the required disclaimers. *Tob Control*, 25(5), 517-520. doi:10.1136/tobaccocontrol-2015-052560
- Collins, D., & Lapsley, H. (2008). *The Cost of Tobacco, Alcohol and Illicit Durg Abuse to Australian Society in 2004/05*. Retrieved from <http://www.health.gov.au/internet/drugstrategy/publishing.nsf/Content/mono64>.
- Department of Health. (n.d.). *Ministerial Drug and Alcohol Forum (MDAF) Communiqué 27 November 2017*,
- Dobbs, R., Sawers, C., Thompson, F., Manyika, J., Woetzel, J., Child, P., et al. (2014). *Overcoming obesity: An initial economic analysis*, McKinsey Global Institute
- Expert Reference Group to COAG Working Group on Mental Health Reform. (2013). *Final Report: Expert Reference Group to COAG Working Group on Mental Health Reform on National Targets and Indicators for mental health reform*,
- Greenhalgh, E., Bayley, M., & Winstanley, M. H. (2019). *Tobacco in Australia: Factors and Issues*. Melbourne: Cancer Council Victoria.
- Guerin, N., & White, V. (2018). *ASSAD 2017 Statistics & Trends: Australian Secondary Students' Use of Tobacco, Alcohol, Over-the-counter Drug, and Illicit Substances*, Cancer Council Victoria
- Hill, S., Amos, A., Clifford, D., & Platt, S. (2014). Impact of tobacco control interventions on socioeconomic inequalities in smoking: review of the evidence. *Tob Control*, 23(e2), e89-97. doi:10.1136/tobaccocontrol-2013-051110
- Hiscock, R., Bauld, L., Amos, A., Fidler, J. A., & Munafo, M. (2012). Socioeconomic status and smoking: a review. *Ann N Y Acad Sci*, 1248, 107-123. doi:10.1111/j.1749-6632.2011.06202.x
- Intergovernmental Committee on Drugs. (2012). *National Tobacco Strategy 2012-2018*. Canberra, Commonwealth of Australia
- Kounang, N. (2019). Skyrocketing teen e-cig use erases recent declines in youth tobacco use. 11 February 2019. Retrieved from <https://edition.cnn.com/2019/02/11/health/cdc-teen-tobacco-declines-erased-vaping/index.html>

Moodie, C., Thrasher, J. F., Cho, Y. J., Barnoya, J., & Chaloupka, F. J. (2018). Flavour capsule cigarettes continue to experience strong global growth. *Tobacco Control*, tobaccocontrol-2018-054711. doi:10.1136/tobaccocontrol-2018-054711

National Health and Medical Research Council. (2017). *CEO Statement: Electronic cigarettes*. Canberra, NHMRC

National Preventative Health Taskforce. (2009). *Australia: The Healthiest Country by 2020 - National Preventative Health Strategy – the Roadmap for Action*. Canberra, Department of Health

Thomas, S., Fayter, D., Misso, K., Ogilvie, D., Petticrew, M., Sowden, A., et al. (2008). Population tobacco control interventions and their effects on social inequalities in smoking: systematic review. *Tobacco Control*, 17(4), 230-237. doi:10.1136/tc.2007.023911

Thrasher, J. F., Abad-Vivero, E. N., Moodie, C., O'Connor, R. J., Hammond, D., Cummings, K. M., et al. (2016). Cigarette brands with flavour capsules in the filter: trends in use and brand perceptions among smokers in the USA, Mexico and Australia, 2012-2014. *Tob Control*, 25(3), 275-283. doi:10.1136/tobaccocontrol-2014-052064

U.S. Department of Health and Human Services. (2018). Surgeon General's Advisory on E-cigarette Use Among Youth. Retrieved from <https://e-cigarettes.surgeongeneral.gov/documents/surgeon-generals-advisory-on-e-cigarette-use-among-youth-2018.pdf>

White, S. (2018). Smoker's aren't getting all the help they need to quit [Press release]

World Health Organization. (2003). *WHO Framework Convention on Tobacco Control*. Geneva, WHO

World Health Organization. (2013). Tobacco Free Initiative (TFI): MPOWER. Retrieved from <https://www.who.int/tobacco/mpower/en/>

World Health Organization. (2014). *Australian progress report on Implementation of the Framework Convention on Tobacco Control 2014*,

World Health Organization. (2015). *The economic and health benefits of tobacco taxation*. Geneva, WHO

World Health Organization. (2017). *Table 9.5.0 in Appendix IX WHO report on the global tobacco epidemic 2017*. Geneva, WHO

Australian Bureau of Statistics (ABS). (2016). *National Aboriginal and Torres Strait Islander Social Survey 2014/15*. Canberra, ABS

Australian Institute of Health and Welfare. (2014). *National Drug Strategy Household Survey detailed report: 2013*. Canberra, AIHW

Australian Institute of Health and Welfare. (2016). *Australian Burden of Disease Study: Impact and causes of illness and death in Australia 2011*. . Canberra, AIHW

Australian Institute of Health and Welfare. (2017). *National Drug Strategy Household Survey 2016: detailed findings*. Canberra, AIHW

Begg, S., Vos, T., Barker, K., Stevenson, C., Stanley, L., & Lopez, A. (2007). *The burden of disease and injury in Australia 2003*. Canberra: AIHW.

Business Wire. (2018). Philip Morris International Inc. (PMI) Reports 2018 Second Quarter Results. Retrieved from <https://www.businesswire.com/news/home/20180719005305/en/Philip-Morris-International-PMI-Reports-2018-Second-Quarter>

Byrne, S., Brindal, E., Williams, G., Anastasiou, K., Tonkin, A., S, B., et al. (2018). *E-cigarettes, smoking and health. A Literature Review UPdate*. Australia, CSIRO

Byron, M. J., Baig, S. A., Moracco, K. E., & Brewer, N. T. (2016). Adolescents' and adults' perceptions of 'natural', 'organic' and 'additive-free' cigarettes, and the required disclaimers. *Tob Control*, 25(5), 517-520. doi:10.1136/tobaccocontrol-2015-052560

Collins, D., & Lapsley, H. (2008). *The Cost of Tobacco, Alcohol and Illicit Durg Abuse to Australian Society in 2004/05*. Retrieved from <http://www.health.gov.au/internet/drugstrategy/publishing.nsf/Content/mono64>.

Department of Health. (n.d.). *Ministerial Drug and Alcohol Forum (MDAF) Communiqué 27 November 2017*,

Dobbs, R., Sawers, C., Thompson, F., Manyika, J., Woetzel, J., Child, P., et al. (2014). *Overcoming obesity: An initial economic analysis*, McKinsey Global Institute

Expert Reference Group to COAG Working Group on Mental Health Reform. (2013). *Final Report: Expert Reference Group to COAG Working Group on Mental Health Reform on National Targets and Indicators for mental health reform*,

Greenhalgh, E., Bayley, M., & Winstanley, M. H. (2019). *Tobacco in Australia: Factors and Issues*. Melbourne: Cancer Council Victoria.

Guerin, N., & White, V. (2018). *ASSAD 2017 Statistics & Trends: Australian Secondary Students' Use of Tobacco, Alcohol, Over-the-counter Drug, and Illicit Substances*, Cancer Council Victoria

Hill, S., Amos, A., Clifford, D., & Platt, S. (2014). Impact of tobacco control interventions on socioeconomic inequalities in smoking: review of the evidence. *Tob Control*, 23(e2), e89-97. doi:10.1136/tobaccocontrol-2013-051110

Hiscock, R., Bauld, L., Amos, A., Fidler, J. A., & Munafò, M. (2012). Socioeconomic status and smoking: a review. *Ann N Y Acad Sci*, 1248, 107-123. doi:10.1111/j.1749-6632.2011.06202.x

Intergovernmental Committee on Drugs. (2012). *National Tobacco Strategy 2012-2018*. Canberra, Commonwealth of Australia

Kounang, N. (2019). Skyrocketing teen e-cig use erases recent declines in youth tobacco use. 11 February 2019. Retrieved from <https://edition.cnn.com/2019/02/11/health/cdc-teen-tobacco-declines-erased-vaping/index.html>

Moodie, C., Thrasher, J. F., Cho, Y. J., Barnoya, J., & Chaloupka, F. J. (2018). Flavour capsule cigarettes continue to experience strong global growth. *Tobacco Control*, tobaccocontrol-2018-054711. doi:10.1136/tobaccocontrol-2018-054711

National Health and Medical Research Council. (2017). *CEO Statement: Electronic cigarettes*. Canberra, NHMRC

National Preventative Health Taskforce. (2009). *Australia: The Healthiest Country by 2020 - National Preventative Health Strategy – the Roadmap for Action*. Canberra, Department of Health

Thomas, S., Fayter, D., Misso, K., Ogilvie, D., Petticrew, M., Sowden, A., et al. (2008). Population tobacco control interventions and their effects on social inequalities in smoking: systematic review. *Tobacco Control*, 17(4), 230-237. doi:10.1136/tc.2007.023911

Thrasher, J. F., Abad-Vivero, E. N., Moodie, C., O'Connor, R. J., Hammond, D., Cummings, K. M., et al. (2016). Cigarette brands with flavour capsules in the filter: trends in use and brand perceptions among smokers in the USA, Mexico and Australia, 2012-2014. *Tob Control*, 25(3), 275-283. doi:10.1136/tobaccocontrol-2014-052064

U.S. Department of Health and Human Services. (2018). Surgeon General's Advisory on E-cigarette Use Among Youth. Retrieved from <https://e-cigarettes.surgeongeneral.gov/documents/surgeon-generals-advisory-on-e-cigarette-use-among-youth-2018.pdf>

White, S. (2018). Smoker's aren't getting all the help they need to quit [Press release]

World Health Organization. (2003). *WHO Framework Convention on Tobacco Control*. Geneva, WHO

World Health Organization. (2013). Tobacco Free Initiative (TFI): MPOWER. Retrieved from <https://www.who.int/tobacco/mpower/en/>

World Health Organization. (2014). *Australian progress report on Implementation of the Framework Convention on Tobacco Control 2014*,

World Health Organization. (2015). *The economic and health benefits of tobacco taxation*. Geneva, WHO

World Health Organization. (2017). *Table 9.5.0 in Appendix IX WHO report on the global tobacco epidemic 2017*. Geneva, WHO

Australian Bureau of Statistics (ABS). (2016). *National Aboriginal and Torres Strait Islander Social Survey 2014/15*. Canberra, ABS

Australian Institute of Health and Welfare. (2014). *National Drug Strategy Household Survey detailed report: 2013*. Canberra, AIHW

Australian Institute of Health and Welfare. (2016). *Australian Burden of Disease Study: Impact and causes of illness and death in Australia 2011*. . Canberra, AIHW

Australian Institute of Health and Welfare. (2017). *National Drug Strategy Household Survey 2016: detailed findings*. Canberra, AIHW

Begg, S., Vos, T., Barker, K., Stevenson, C., Stanley, L., & Lopez, A. (2007). *The burden of disease and injury in Australia 2003*. Canberra: AIHW.

Business Wire. (2018). Philip Morris International Inc. (PMI) Reports 2018 Second Quarter Results. Retrieved from <https://www.businesswire.com/news/home/20180719005305/en/Philip-Morris-International-PMI-Reports-2018-Second-Quarter>

- Byrne, S., Brindal, E., Williams, G., Anastasiou, K., Tonkin, A., S, B., et al. (2018). *E-cigarettes, smoking and health. A Literature Review UPdate*. Australia, CSIRO
- Byron, M. J., Baig, S. A., Moracco, K. E., & Brewer, N. T. (2016). Adolescents' and adults' perceptions of 'natural', 'organic' and 'additive-free' cigarettes, and the required disclaimers. *Tob Control*, 25(5), 517-520. doi:10.1136/tobaccocontrol-2015-052560
- Collins, D., & Lapsley, H. (2008). *The Cost of Tobacco, Alcohol and Illicit Drug Abuse to Australian Society in 2004/05*. Retrieved from <http://www.health.gov.au/internet/drugstrategy/publishing.nsf/Content/mono64>.
- Department of Health. (n.d.). *Ministerial Drug and Alcohol Forum (MDAF) Communiqué 27 November 2017*,
- Dobbs, R., Sawers, C., Thompson, F., Manyika, J., Woetzel, J., Child, P., et al. (2014). *Overcoming obesity: An initial economic analysis*, McKinsey Global Institute
- Expert Reference Group to COAG Working Group on Mental Health Reform. (2013). *Final Report: Expert Reference Group to COAG Working Group on Mental Health Reform on National Targets and Indicators for mental health reform*,
- Greenhalgh, E., Bayley, M., & Winstanley, M. H. (2019). *Tobacco in Australia: Factors and Issues*. Melbourne: Cancer Council Victoria.
- Guerin, N., & White, V. (2018). *ASSAD 2017 Statistics & Trends: Australian Secondary Students' Use of Tobacco, Alcohol, Over-the-counter Drug, and Illicit Substances*, Cancer Council Victoria
- Hill, S., Amos, A., Clifford, D., & Platt, S. (2014). Impact of tobacco control interventions on socioeconomic inequalities in smoking: review of the evidence. *Tob Control*, 23(e2), e89-97. doi:10.1136/tobaccocontrol-2013-051110
- Hiscock, R., Bauld, L., Amos, A., Fidler, J. A., & Munafo, M. (2012). Socioeconomic status and smoking: a review. *Ann N Y Acad Sci*, 1248, 107-123. doi:10.1111/j.1749-6632.2011.06202.x
- Intergovernmental Committee on Drugs. (2012). *National Tobacco Strategy 2012-2018*. Canberra, Commonwealth of Australia
- Kounang, N. (2019). Skyrocketing teen e-cig use erases recent declines in youth tobacco use. 11 February 2019. Retrieved from <https://edition.cnn.com/2019/02/11/health/cdc-teen-tobacco-declines-erased-vaping/index.html>
- Moodie, C., Thrasher, J. F., Cho, Y. J., Barnoya, J., & Chaloupka, F. J. (2018). Flavour capsule cigarettes continue to experience strong global growth. *Tobacco Control*, tobaccocontrol-2018-054711. doi:10.1136/tobaccocontrol-2018-054711
- National Health and Medical Research Council. (2017). *CEO Statement: Electronic cigarettes*. Canberra, NHMRC
- National Preventative Health Taskforce. (2009). *Australia: The Healthiest Country by 2020 - National Preventative Health Strategy – the Roadmap for Action*. Canberra, Department of Health

- Thomas, S., Fayter, D., Misso, K., Ogilvie, D., Petticrew, M., Sowden, A., et al. (2008). Population tobacco control interventions and their effects on social inequalities in smoking: systematic review. *Tobacco Control*, 17(4), 230-237. doi:10.1136/tc.2007.023911
- Thrasher, J. F., Abad-Vivero, E. N., Moodie, C., O'Connor, R. J., Hammond, D., Cummings, K. M., et al. (2016). Cigarette brands with flavour capsules in the filter: trends in use and brand perceptions among smokers in the USA, Mexico and Australia, 2012-2014. *Tob Control*, 25(3), 275-283. doi:10.1136/tobaccocontrol-2014-052064
- U.S. Department of Health and Human Services. (2018). Surgeon General's Advisory on E-cigarette Use Among Youth. Retrieved from <https://e-cigarettes.surgeongeneral.gov/documents/surgeon-generals-advisory-on-e-cigarette-use-among-youth-2018.pdf>
- White, S. (2018). Smoker's aren't getting all the help they need to quit [Press release]
- World Health Organization. (2003). *WHO Framework Convention on Tobacco Control*. Geneva, WHO
- World Health Organization. (2013). Tobacco Free Initiative (TFI): MPOWER. Retrieved from <https://www.who.int/tobacco/mpower/en/>
- World Health Organization. (2014). *Australian progress report on Implementation of the Framework Convention on Tobacco Control 2014*,
- World Health Organization. (2015). *The economic and health benefits of tobacco taxation*. Geneva, WHO
- World Health Organization. (2017). *Table 9.5.0 in Appendix IX WHO report on the global tobacco epidemic 2017*. Geneva, WHO
- Australian Bureau of Statistics (ABS). (2016). *National Aboriginal and Torres Strait Islander Social Survey 2014/15*. Canberra, ABS
- Australian Institute of Health and Welfare. (2014). *National Drug Strategy Household Survey detailed report: 2013*. Canberra, AIHW
- Australian Institute of Health and Welfare. (2016). *Australian Burden of Disease Study: Impact and causes of illness and death in Australia 2011*. . Canberra, AIHW
- Australian Institute of Health and Welfare. (2017). *National Drug Strategy Household Survey 2016: detailed findings*. Canberra, AIHW
- Begg, S., Vos, T., Barker, K., Stevenson, C., Stanley, L., & Lopez, A. (2007). *The burden of disease and injury in Australia 2003*. Canberra: AIHW.
- Business Wire. (2018). Philip Morris International Inc. (PMI) Reports 2018 Second Quarter Results. Retrieved from <https://www.businesswire.com/news/home/20180719005305/en/Philip-Morris-International-PMI-Reports-2018-Second-Quarter>
- Byrne, S., Brindal, E., Williams, G., Anastasiou, K., Tonkin, A., S, B., et al. (2018). *E-cigarettes, smoking and health. A Literature Review UPdate*. Australia, CSIRO

Byron, M. J., Baig, S. A., Moracco, K. E., & Brewer, N. T. (2016). Adolescents' and adults' perceptions of 'natural', 'organic' and 'additive-free' cigarettes, and the required disclaimers. *Tob Control*, 25(5), 517-520. doi:10.1136/tobaccocontrol-2015-052560

Collins, D., & Lapsley, H. (2008). *The Cost of Tobacco, Alcohol and Illicit Drug Abuse to Australian Society in 2004/05*. Retrieved from <http://www.health.gov.au/internet/drugstrategy/publishing.nsf/Content/mono64>.

Department of Health. (n.d.). *Ministerial Drug and Alcohol Forum (MDAF) Communiqué 27 November 2017*,

Dobbs, R., Sawers, C., Thompson, F., Manyika, J., Woetzel, J., Child, P., et al. (2014). *Overcoming obesity: An initial economic analysis*, McKinsey Global Institute

Expert Reference Group to COAG Working Group on Mental Health Reform. (2013). *Final Report: Expert Reference Group to COAG Working Group on Mental Health Reform on National Targets and Indicators for mental health reform*,

Greenhalgh, E., Bayley, M., & Winstanley, M. H. (2019). *Tobacco in Australia: Factors and Issues*. Melbourne: Cancer Council Victoria.

Guerin, N., & White, V. (2018). *ASSAD 2017 Statistics & Trends: Australian Secondary Students' Use of Tobacco, Alcohol, Over-the-counter Drug, and Illicit Substances*, Cancer Council Victoria

Hill, S., Amos, A., Clifford, D., & Platt, S. (2014). Impact of tobacco control interventions on socioeconomic inequalities in smoking: review of the evidence. *Tob Control*, 23(e2), e89-97. doi:10.1136/tobaccocontrol-2013-051110

Hiscock, R., Bauld, L., Amos, A., Fidler, J. A., & Munafo, M. (2012). Socioeconomic status and smoking: a review. *Ann N Y Acad Sci*, 1248, 107-123. doi:10.1111/j.1749-6632.2011.06202.x

Intergovernmental Committee on Drugs. (2012). *National Tobacco Strategy 2012-2018*. Canberra, Commonwealth of Australia

Kounang, N. (2019). Skyrocketing teen e-cig use erases recent declines in youth tobacco use. 11 February 2019. Retrieved from <https://edition.cnn.com/2019/02/11/health/cdc-teen-tobacco-declines-erased-vaping/index.html>

Moodie, C., Thrasher, J. F., Cho, Y. J., Barnoya, J., & Chaloupka, F. J. (2018). Flavour capsule cigarettes continue to experience strong global growth. *Tobacco Control*, tobaccocontrol-2018-054711. doi:10.1136/tobaccocontrol-2018-054711

National Health and Medical Research Council. (2017). *CEO Statement: Electronic cigarettes*. Canberra, NHMRC

National Preventative Health Taskforce. (2009). *Australia: The Healthiest Country by 2020 - National Preventative Health Strategy – the Roadmap for Action*. Canberra, Department of Health

Thomas, S., Fayter, D., Misso, K., Ogilvie, D., Petticrew, M., Sowden, A., et al. (2008). Population tobacco control interventions and their effects on social inequalities in smoking: systematic review. *Tobacco Control*, 17(4), 230-237. doi:10.1136/tc.2007.023911

Thrasher, J. F., Abad-Vivero, E. N., Moodie, C., O'Connor, R. J., Hammond, D., Cummings, K. M., et al. (2016). Cigarette brands with flavour capsules in the filter: trends in use and brand perceptions among smokers in the USA, Mexico and Australia, 2012-2014. *Tob Control*, 25(3), 275-283. doi:10.1136/tobaccocontrol-2014-052064

U.S. Department of Health and Human Services. (2018). Surgeon General's Advisory on E-cigarette Use Among Youth. Retrieved from <https://e-cigarettes.surgeongeneral.gov/documents/surgeon-generals-advisory-on-e-cigarette-use-among-youth-2018.pdf>

White, S. (2018). Smoker's aren't getting all the help they need to quit [Press release]

World Health Organization. (2003). *WHO Framework Convention on Tobacco Control*. Geneva, WHO

World Health Organization. (2013). Tobacco Free Initiative (TFI): MPOWER. Retrieved from <https://www.who.int/tobacco/mpower/en/>

World Health Organization. (2014). *Australian progress report on Implementation of the Framework Convention on Tobacco Control 2014*,

World Health Organization. (2015). *The economic and health benefits of tobacco taxation*. Geneva, WHO

World Health Organization. (2017). *Table 9.5.0 in Appendix IX WHO report on the global tobacco epidemic 2017*. Geneva, WHO

National Tobacco Strategy (Intergovernmental committee on drugs, 2012):	National Preventative Health Taskforce (National Preventative Health Taskforce, 2009):	World Health Organization (World Health Organization): MPOWER
Nine priority areas and actions	Eleven key action areas	
<ol style="list-style-type: none"> 1. Protect public health policy, including tobacco control policies, from tobacco industry interference 2. Strengthen mass media campaigns to: motivate smokers to quit and recent quitters to remain quit; discourage uptake of smoking; and reshape social norms about smoking 3. Continue to reduce the affordability of tobacco products 4. Bolster and build on existing programs and partnerships to reduce smoking rates among Aboriginal and Torres Strait Islander people 5. Strengthen efforts to reduce smoking among populations with a high prevalence of smoking 6. Eliminate remaining advertising, promotion and sponsorship of tobacco products 7. Consider further regulation of the contents, product disclosure and supply of tobacco products and alternative nicotine delivery systems 8. Reduce exceptions to smoke-free workplaces, public places and other settings 9. Provide greater access to a range of evidence-based cessation services to support smokers to quit <p>http://www.nationaldrugstrategy.gov.au/internet/drugstrategy/publishing.nsf/Content/D4E3727950BDBAE4CA257AE70003730C/\$File/National%20Tobacco%20Strategy%202012-2018.pdf</p>	<ol style="list-style-type: none"> 1. Make tobacco products more expensive 2. Increase the frequency, reach and intensity of social marketing campaigns 3. End all advertising and promotion of tobacco products 4. Eliminate exposure to second-hand smoke in public places 5. Regulate manufacturing and further regulate packaging and supply of tobacco products 6. Ensure all smokers in contact with health services are encouraged and supported to quit, with particular effort to reach pregnant women and those with chronic health problems 7. Work in partnership with Indigenous groups to boost efforts to reduce smoking and exposure to passive smoking among Indigenous Australians 8. Boost efforts to discourage smoking among people in other highly disadvantaged groups 9. Assist parents and educators to discourage use of tobacco and to protect young people from second-hand smoke 10. Ensure that the public, media, politicians and other opinion leaders remain aware of the need for sustained and vigorous action to discourage tobacco use 11. Ensure implementation and measure progress against and towards targets <p>http://www.preventativehealth.org.au/internet/preventativehealth/publishing.nsf/Content/CCD7323311E358BECA2575FD000859E1/\$File/nphs-roadmap-4.pdf</p>	<p>Monitor tobacco use and prevention policies</p> <p>Protect people from tobacco smoke</p> <p>Offer help to quit tobacco use</p> <p>Warn about the dangers of tobacco</p> <p>Enforce bans on tobacco advertising, promotion and sponsorship</p> <p>Raise taxes on tobacco</p> <p>http://www.who.int/tobacco/mpower/en/</p>

7. Diabetes and obesity

Stephen Colagiuri and Gary Sacks

Original authors: Sharleen O'Reilly, Stephen Colagiuri and Anna Peeters

Since 2015, we have:

Produced two national report cards highlighting obesity and diabetes for specific cohorts: [Australia's Health Tracker by Socio-Economic Status](#) and [Australia's Physical and Mental Health Tracker](#)

The WHO Action Plan 2013–2020 for the Prevention and Control of Non-Communicable Diseases aims to provide health policy and practice relevant targets for the prevention and treatment of NCDs by the year 2025. The report contains 25 indicators suitable for monitoring progress, and sets 2010 as the baseline monitoring year. Target 1 is a 25% relative reduction in overall mortality from cardiovascular disease, cancer, diabetes, or chronic respiratory diseases. The focal points related to lifestyle are diabetes, overweight and obesity, along with tobacco, physical inactivity, harmful use of alcohol, salt and high blood pressure.

Table 7.1: WHO diabetes and obesity target and indicators

WHO Target	WHO Indicator
Reverse the rise in diabetes and obesity	Age-standardised prevalence of raised blood glucose/diabetes among persons aged 18 years or older (defined as fasting plasma glucose concentration ≥ 7.0 mmol/L or on medication for raised blood glucose)
	Prevalence of overweight and obesity in adolescents (defined according to the WHO growth reference for school-aged children and adolescents, overweight – one standard deviation BMI for age and sex, and obese – two standard deviations BMI for age and sex)
	Age-standardised prevalence of overweight and obesity in persons aged 18 years or older (defined as BMI ≥ 25 kg/m ² for overweight and BMI ≥ 30 kg/m ² for obesity)

This chapter is an evaluation of the current context of both obesity and diabetes in Australia to estimate how realistic the WHO targets and their monitoring are for the Australian setting. Additionally, challenges and potential ways of addressing diabetes and obesity targets (listed in Table 7.1) are discussed.

7.1 Key findings

- Over the last few decades, obesity, overweight and type 2 diabetes have increased in Australia.
- The WHO target of reversing the rise in obesity and diabetes by 2025 will be challenging for Australia to achieve. While the target is sound, achieving it within the WHO timeline is likely to be difficult and Australia is almost certain to need more time to do so.

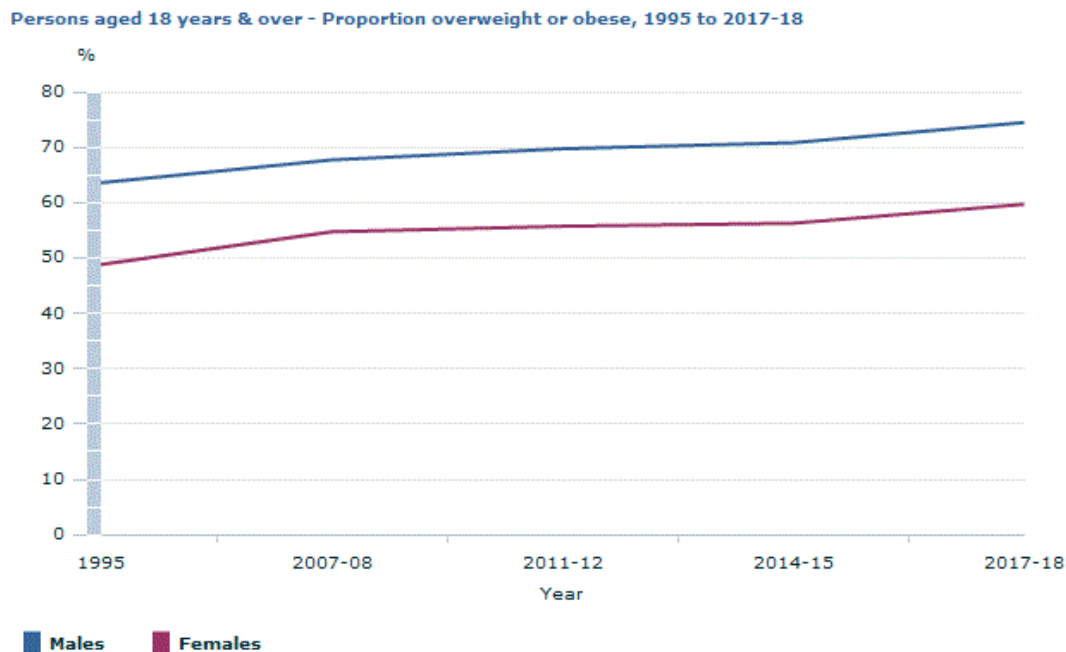
- There is a national diabetes strategy, with an accompanying implementation plan, in place. However, it is not clear whether implementation of the plan will include interventions that are potent enough to meet the relevant targets. In 2018, the Council of Australian Governments (COAG) committed to develop a National Obesity Strategy. There is an opportunity for this strategy to pave the way for substantial policy action in this area.
- Monitoring is essential and needs to include regular assessment of population weight, height and diabetes prevalence and incidence spread across age groups, gender, social disadvantage, ethnicity and geography. This activity should be integrated into a national NCD surveillance system based on the AHS, including anthropometric and biomedical measurements in addition to diet and physical activity behaviour conducted every five years.

7.2 Current rates of obesity in Australia

Adults

According to the 2017-18 NHS, the average weight for men has increased by 4.2 kg and for women by 4.3 kg between 1995 and 2017-18 (Australia Bureau of Statistics, 2018) . Almost three quarters of men (74.5%) and well over half of women (59.7%) are overweight or obese (Australia Bureau of Statistics, 2018). One in four Australians is obese and nearly half a million are morbidly obese (BMI > 40) (Australia Bureau of Statistics, 2018). In 2011-12, the average BMI for men was 28.5 and 27.6 for women (Australian Bureau of Statistics, 2013a). Overweight and obesity prevalence has continued to rise in Australia (Figure 7.1) (Australia Bureau of Statistics, 2018; Leung & Funder, 2014). WHO suggest a 2010 baseline, but national data on the prevalence of overweight and obesity is available for 1995, 2008 and 2011-12. Figure 7.1 takes 2008 as the baseline, hence the WHO target is 61.1%.

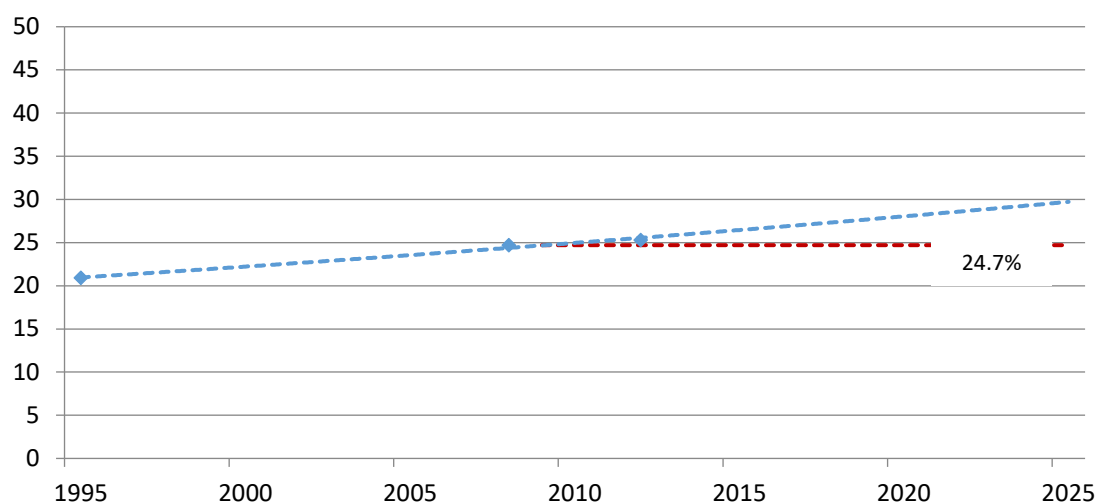
Figure 7.1: Prevalence of overweight/obesity in Australian adults, aged 18 years and over. Source: Australian Bureau of Statics National Health Survey: First Results, 2017-18



Children and adolescents

The percentage of overweight children and adolescents has more than doubled in Australia since the mid-1980s (Australian Bureau of Statistics, 2013a; Magarey et al., 2001). According to the 2017-18 NHS, one quarter (24.9%) of children aged 5-17 years were overweight or obese (Australia Bureau of Statistics, 2018). The 2017-18 NHS report suggests that these rates of remained stable over the last ten years. Children who are obese are likely to maintain their obesity as adults, thereby increasing the risk of developing NCDs and complications (Serdula et al., 1993). Figure 7.2 shows the prevalence of overweight or obesity in Australian children aged 5–17 since 1995 and projected prevalence to 2025. The 2008 baseline and WHO target is 24.7%.

Figure 7.2: Prevalence (documented and projected) of overweight/obesity in Australian children aged 5–17



Source: Compiled by the AHPC using data from Magarey et al 2001, NHS (2007-08), AHS (2011-12), Haby et al. (2011) (Australian Bureau of Statistics, 2013a; Australian Bureau of Statistics (ABS), 2009; Haby & Markwick, 2008; Magarey et al., 2001). **Key:** Red dotted line 2010 baseline and WHO Target; blue dotted line- actual and projected prevalence.

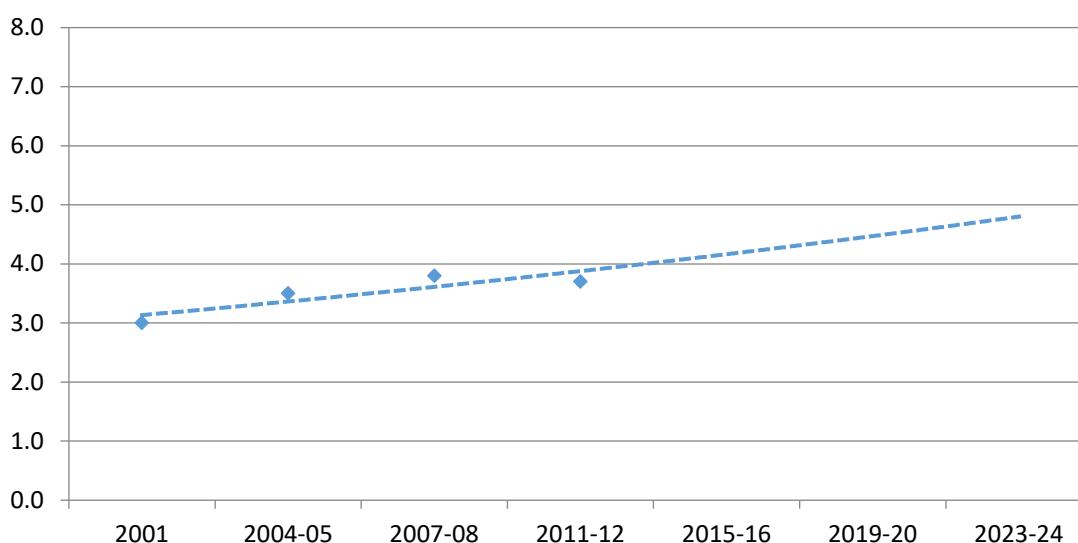
7.3 Prevalence of diabetes

Diabetes results in premature mortality and a range of complications including heart disease, stroke, chronic kidney disease, vision loss and amputations (Stratton et al., 2000). The risk of type 2 diabetes increases with increasing weight, even within the normal BMI range, but the greatest increase is seen in obese individuals (Flegal et al., 2012; Ogden et al., 2007).

The prevalence of measured raised blood glucose or diabetes among adults aged 18+ in Australia was 4.8% in 2010 (compiled by the AHPC using AHS data (Australian Bureau of Statistics, 2013a)), and is therefore the 2025 WHO Target for diabetes prevalence.

Figure 7.3 shows the prevalence of self-reported diabetes in Australians aged 18 years and over between 2001 and 2011–12 and projected to 2023–24. Self-reported estimates may underestimate prevalence, as some people may not be aware they have diabetes (Australian Institute of Health and Welfare, 2014).

Figure 7.3: Prevalence of self-reported diabetes, age 18 years and over



Source: Compiled by the AHPC using data from ABS (NHS and AHS) (Australian Bureau of Statistics, 2013a; Australian Institute of Health and Welfare, 2011). Key: Blue dotted line, actual self-report and projected prevalence.

7.4 Equity of risk

High levels of disparity exist for both obesity and diabetes when prevalence is examined by SES, location, and ethnicity (Australian Bureau of Statistics, 2013a, 2013b). Australians living outside of the major cities have higher rates of overweight/obesity (72.3%) than urban Australians (65%) (Australia Bureau of Statistics, 2018) reflecting their lower SES. Australians at greatest disadvantage as measured by SES are 57% more likely to be obese than the most advantaged (Harris et al., 2017). On the basis of 2012–13 NATSIHS information, two-thirds (66%) of ATSI adults were overweight or obese and they were three times as likely as non-Indigenous people to have diabetes or high sugar levels (Australian Bureau of Statistics, 2013b). Figure 7.3 shows the prevalence of self-reported diabetes in Australians aged 18 years and over between 2001 and 2011–12 and projected to 2023–24.

7.5 Proposed Australian targets and indicators and their assessment

Target	Indicators	Data needed to track progress
Reverse the rise in obesity	<ul style="list-style-type: none"> Age-standardised prevalence of normal weight, overweight and obesity class I, II, III in persons 18 years or older 	<ul style="list-style-type: none"> Regular national measurement of children and adults through the AHS with data collection should be undertaken in 2021 and thereafter, at six-year intervals.
	<ul style="list-style-type: none"> Prevalence of normal weight, overweight and obesity in children and adolescents 	<ul style="list-style-type: none"> Use cut-points for childhood growth curves as specified by both WHO and IOTF
	<ul style="list-style-type: none"> Age-standardised proportion of total energy intake from discretionary foods in persons aged 18 years or older and in children and adolescents (2–17 years) 	<ul style="list-style-type: none"> National Nutrition and Physical Activity Survey (AHS) measured regularly at five-year intervals. Use ABS-defined list of discretionary foods
	<ul style="list-style-type: none"> Prevalence of breastfeeding and exclusive breastfeeding 	<ul style="list-style-type: none"> National Infant Feeding Survey with ongoing data collection at regular five-year intervals

Reverse the rise in new diabetes	<ul style="list-style-type: none"> • Age-standardised incidence and prevalence of diabetes in persons 25-65yrs • Use of HbA1c \geq 6.5% to the current criteria of fasting glucose and taking blood glucose lowering medications as a tool for the early diagnosis of type 2 diabetes 	<ul style="list-style-type: none"> • The AHS, with data collection at six-year intervals or more often. The National Diabetes Service Scheme could also provide suitable information with improved data quality
-----------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Note: the targets include stabilisation of obesity and diabetes rates both for the total population and for selected socio-demographic groups. Incidence of diabetes is not confirmed as currently available.

7.6 Policy initiatives to address obesity and diabetes rates in Australians

- The Australian National Diabetes Strategy 2016–2020 (the Strategy) was released in 2015. Subsequently, in 2017, an implementation plan (Australian Health Ministers' Advisory Council, 2017) was released for the Strategy. The implementation plan includes a wide range of measures designed to prevent and manage diabetes. It also includes a comprehensive set of indicators to measure progress against the goals of the Strategy (Department of Health, 2018).
- In 2018, the Council of Australian Governments (COAG) Health Council agreed that a National Obesity Strategy would be developed. The first phase of the development process would include a Commonwealth funded National Obesity Summit, which was held in February 2019.
- Also in 2018, the Senate established a [Select Committee into the Obesity Epidemic in Australia](#). This included an inquiry into numerous aspects of the obesity epidemic in Australia, with a particular focus on childhood obesity. The findings and recommendations of the Select Committee [into the Obesity Epidemic in Australia](#) were publicly released in December 2018.
- An assessment of the extent to which each jurisdiction in Australia was implementing globally recommended policies for obesity prevention was conducted in 2016 (Obesity Policy Coalition, n.d.). This assessment found that Australia was meeting best practice in the implementation of some policies, including aspects of food labelling (such as the development of the Health Star Rating scheme, and regulations on health claims), food prices (no GST on basic foods), and regular monitoring of population body weight. However, there were a number of areas where Australia was significantly lagging behind other countries in their efforts to address unhealthy diets and obesity. Priority areas recommended for action included development of an overall national strategy and implementation plan for improving population nutrition, taxes to increase the price of unhealthy foods (especially sugary drinks), and regulations to reduce exposure of children to marketing of unhealthy food. The assessment also noted that Australian states and territories varied in their level of implementation of internationally recommended policies. Some examples of international best practice were identified at the State level, but there is a need for a national co-ordinated approach to issues such as marketing to children, school food and government food provision.
- There is broad consensus (Obesity Policy Coalition and The Global Obesity Centre Deakin University, 2017) among community, public health, medical and academic groups on priority actions to be included in a national obesity strategy.
- The economic credentials of a wide range of obesity prevention policy options were assessed for Australia in 2018, as part of the ACE-Obesity Policy study (Anathapavan

J et al., 2018). This study found that a wide-range of policy options, across multiple sectors and levels of government, and including a mix of regulatory and program-based interventions, were likely to be cost-effective options for preventing obesity.

7.7 Discussion

The key population-based strategy to reverse the rise in obesity and diabetes is preventing weight gain in adults and unhealthy weight gain in children. This requires comprehensive action over a variety of policy areas, across multiple sectors and level of government (summarised in the Appendix). The Australian National Diabetes Strategy (developed) and the National Obesity Strategy (currently under development) provide a framework for implementation, but will need to be accompanied by substantial implementation resources and political commitment to action in order to be effective in meeting the target for diabetes and obesity.

Indeed, the target for diabetes and obesity will be very challenging for Australia to achieve within the ambitious WHO timeline of 2025. Monitoring is essential to this endeavour; reporting will not be possible without an ongoing commitment for a nationally representative data collection occurring at least every five years. Similarly, reporting standards need to be agreed to ensure relevant data results from these collections.

There was a consensus within the working group that glycated haemoglobin (HbA1c) $\geq 6.5\%$ should be added to the current criteria of fasting plasma glucose and the taking of blood glucose lowering medication. This was supported by the Australian Diabetes Society and associated colleagues. Along with the Australian Diabetes Society and the World Health Organization, HbA1c has also been endorsed as a test for diabetes by the International Diabetes Federation and the American Diabetes Association (American Diabetes Association, 2011; World Health Organization, 2011). The HbA1c test is advantageous in that it provides a picture of blood glucose control over a longer period of time (up to 3 months). This helps with overall diabetes management, in addition to the 'real-time' feedback that is provided by blood glucose level tests. Evidence is available supporting the use of HbA1c tests for diabetes management. (e.g.(Colagiuri et al., 2011)) Improved national data is recommended.

References

- American Diabetes Association. (2011). Standards of Medical Care in Diabetes—2011. *Diabetes Care*, 34(Supplement 1), S11-S61. doi:10.2337/dc11-S011
- Anathapavan J, Sacks, G., Brown, V., Moodie, M., Nguyen P, Bardenregt, J., et al. (2018). *Assessing Cost-Effectiveness of Obesity Prevention Policies in Australia 2018 (ACE-Obesity Policy)*. Melbourne, Deakin University
- Australia Bureau of Statistics. (2018). *National Health Survey: First Results 2017-18*. Canberra, ABS
- Australian Bureau of Statistics. (2013a). *Australian Health Survey: Updated Results, 2011-12*. Canberra: ABS Retrieved from <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/4364.0.55.003main+features12011-2012>.
- Australian Bureau of Statistics. (2013b). Profiles of Health, Australia, 2011-13. Retrieved from <http://www.abs.gov.au/ausstats/abs@.nsf/lookup/4338.0main+features12011-13>
- Australian Bureau of Statistics (ABS). (2009). *National Health Survey: Summary of results 2007–2008*. Canberra, ABS

- Australian Health Ministers' Advisory Council. (2017). *Diabetes in Australia: Focus on the future*. Canberra, Australian Government
- Australian Institute of Health and Welfare. (2011). *Diabetes prevalence in Australia: detailed estimates for 2007-08*. Canberra, AIHW
- Australian Institute of Health and Welfare. (2014). *Cardiovascular disease, diabetes and chronic kidney disease - Australian facts: prevalence and incidence*, . Canberra, AIHW
- Colagiuri, S., Lee, C. M., Wong, T. Y., Balkau, B., Shaw, J. E., & Borch-Johnsen, K. (2011). Glycemic thresholds for diabetes-specific retinopathy: implications for diagnostic criteria for diabetes. *Diabetes Care*, *34*(1), 145-150. doi:10.2337/dc10-1206
- Department of Health. (2018). Australian National Diabetes Strategy 2016-2020. *Diabetes*. Retrieved from <http://www.health.gov.au/internet/main/publishing.nsf/content/nds-2016-2020>
- Flegal, K. M., Carroll, M. D., Kit, B. K., & Ogden, C. L. (2012). Prevalence of obesity and trends in the distribution of body mass index among us adults, 1999-2010. *JAMA*, *307*(5), 491-497. doi:10.1001/jama.2012.39
- Haby, M., & Markwick, A. (2008). *Future prevalence of overweight and obesity in Australian children and adolescents 2005-2025*. Melbourne, Department of Human Services
- Harris, B., Fetherston, H., & Calder, R. (2017). *Australia's Health Tracker by Socio-Economic Status 2017*. Melbourne, Australian Health Policy Collaboration, Victoria University
- Leung, J., & Funder, J. (2014). *Obesity: a national epidemic and its impact on Australia*. Sydney, Obesity Australia
- Magarey, A., Daniels, L., & J. C. Boulton, T. (2001). *Prevalence of Overweight and Obesity in Australian Children and Adolescents: Reassessment of 1985 and 1995 Data Against New Standard International Definitions* (Vol. 174).
- Obesity Policy Coalition. (n.d.). Food Policy Index. Retrieved from <http://www.opc.org.au/what-we-do/food-policy-index>
- Obesity Policy Coalition and The Global Obesity Centre Deakin University. (2017). *Tipping the Scales Australian Obesity Prevention Consensus*. Melbourne,
- Ogden, C. L., Yanovski, S. Z., Carroll, M. D., & Flegal, K. M. (2007). The Epidemiology of Obesity. *Gastroenterology*, *132*(6), 2087-2102. doi:<https://doi.org/10.1053/j.gastro.2007.03.052>
- Serdula, M. K., Ivery, D., Coates, R. J., Freedman, D. S., Williamson, D. F., & Byers, T. (1993). Do Obese Children Become Obese Adults? A Review of the Literature. *Preventive Medicine*, *22*(2), 167-177. doi:<https://doi.org/10.1006/pmed.1993.1014>
- Stratton, I. M., Adler, A. I., Neil, H. A. W., Matthews, D. R., Manley, S. E., Cull, C. A., et al. (2000). Association of glycaemia with macrovascular and microvascular complications of type 2 diabetes (UKPDS 35): prospective observational study. *BMJ*, *321*(7258), 405-412. doi:10.1136/bmj.321.7258.405
- World Health Organization. (2011). *Use of Glycated Haemoglobin (HbA1c) in the Diagnosis of Diabetes Mellitus*. Geneva, WHO

Appendix: The Roadmap for Action: Obesity in Australia – A need for urgent action, in *Australia: the healthiest country by 2020*, National Preventative Health Taskforce (2009)

- Key action area 1: Drive environmental changes throughout the community that increase levels of physical activity and reduce sedentary behaviour.
- Key action area 2: Drive change within the food supply to increase the availability and demand for healthier food products, and decrease the availability and demand for unhealthy food products.
- Key action area 3: Embed physical activity and healthy eating in everyday life.
- Key action area 4: Encourage people to improve their levels of physical activity and healthy eating through comprehensive and effective social marketing.
- Key action area 5: Reduce exposure of children and others to marketing, advertising, promotion and sponsorship of energy-dense nutrient-poor foods and beverages.
- Key action area 6: Strengthen, skill and support primary healthcare and public health workforce to help people in making healthy choices.
- Key action area 7: Address maternal and child health, enhancing early life and growth patterns.
- Key action area 8: Support low-income communities to improve their levels of physical activity and healthy eating.
- Key action area 9: Reduce obesity prevalence and burden among Indigenous Australians.
- Key action area 10: Build the evidence base, monitor and evaluate effectiveness of actions.

Additional action areas for diabetes

- Reduce the prevalence of modifiable risk factors in the general population.
- Identify and provide prevention programmes to people with pre-diabetes.
- Enhance early life and growth patterns through maternal, family and child health.

Infrastructure needed to support policy action

- Establish a National Preventive Health Agency.
- Create a web-based clearing house for organisational plans and achievements and conduct periodic surveys of barriers and enablers to action.
- Establish a national report card, recognition and awards scheme.
- Undertake a workforce audit and develop a workforce strategy.
- Establish prevention as a priority for the Health Workforce Australia Agency.
- Implement and extend the National Health Risk Survey program.
- Develop a National Strategic Framework for preventive health research supported by a strategic research fund, research register, and network of research centres.

Additional details for indicators

Prevalence of overweight and obesity in children and adolescents

The focus for this sub-group of the population will be on “halting unhealthy weight gain”, not halting the rise in weight as weight gain is appropriate for growing children.

Age-standardised proportion of total energy intake from discretionary foods

Age-specific targets for reduction in discretionary food intake would be calculated by taking the recommended maximum serves of discretionary foods for each age group and gender set out in the Australian Dietary Guidelines and multiplying this by 600kJ (maximum defined energy content of one serve of discretionary foods) and dividing this by the age and gender specific estimated energy requirement set out in the Nutrient Reference Values for Australians. This will provide the maximum proportion of energy from discretionary foods in the diet recommended by the Australian Dietary Guidelines¹⁰.

Nationally agreed indicators for breastfeeding

For the detailed questions used to acquire the data for the indicator “Prevalence of breastfeeding and exclusive breastfeeding using nationally agreed indicator questions”, see AIHW (2011b). These questions have been used nationally to measure breastfeeding rates and are suitable for ongoing monitoring of breastfeeding practices.

¹⁰ Page 41.

https://www.nhmrc.gov.au/files/nhmrc/publications/attachments/n55a_australian_dietary_guidelines_summary_131014.pdf

8. Mental Health

Philip Batterham

Original authors: Penny Tolhurst and Philip Batterham

Since 2015, we have:

Produced a national report card, [Australia's Physical and Mental Health Tracker](#)

Australia's Physical and Mental Health Tracker is the first Australian study to quantify the higher risk of co-morbidities for Australians living with a physical and/or mental health condition

This report has been produced as part of a project to tailor or develop chronic disease targets and indicators for Australia. The WHO target and indicators relevant to mental health are from the *WHO Global Mental Health Action Plan 2013–2020* (World Health Organization, 2013), which contains six global targets and indicators (see Appendix). The two that were considered most relevant, service coverage and suicide rate, are in the table below.

Table 8.1: Selected WHO mental health targets and indicators

Target	Indicator	Means of verification
Service coverage for severe mental disorders will have increased by 20% (by the year 2020)	Proportion of persons with a severe mental disorder [psychosis; bipolar affective disorder; moderate-severe depression] who are using services [%]	Numerator: Cases of severe mental disorder in receipt of services, derived from routine information systems or, if unavailable, a baseline and follow-up survey of health facilities in one or more defined geographical areas of a country Denominator: Total cases of severe mental disorder in the sampled population, derived from national surveys or, if unavailable, subregional global prevalence estimates
The rate of suicide in countries will be reduced by 10% (by the year 2020)	Number of suicide deaths per year per 100,000 population	Routine annual registration of deaths due to suicide (baseline year: 2012 or 2013)

8.1 Key findings

- Mental illness and suicide are significant public health concerns. The 2007 National Survey of Mental Health and Wellbeing (NSMHWB) estimated that 20% of the adult population (3.2 million people) had experienced a common mental disorder in the previous 12 months (Australia Bureau of Statistics, 2008).
- In 2017, the age-standardised suicide death rate was 12.6 deaths per 100,000 persons. Suicide was the leading cause of death among people aged 15-44 years and the second leading cause for 45-54 year olds in 2017 (Australian Bureau of Statistics, 2018)
- There is a strong link between mental and physical health. The Australian Bureau of Statistics estimated more than 2.4 million Australians live with both a mental health condition and chronic physical health condition (Harris, Ben. et al., 2018)

- The WHO target of a 10% reduction in the suicide rate by 2020 is achievable in Australia if a systemic approach to suicide prevention is implemented.
- Service coverage is a less relevant measure of population mental health in Australia than measures of social inclusion. Measures of social inclusion such as rates of employment of people with mental illness reflect an area of importance to consumers, families, and society. Measures of the physical health of people with mental illness are also important due to disparities in physical health outcomes.
- Health surveillance in relation to mental health is continuing to develop, as are performance indicators. The Fifth National Mental Health and Suicide Prevention Plan identifies 24 national key performance indicators which either can currently be reported on or which could realistically be implemented within the life of the plan. Not all indicators are ready for use, as they may require developmental work, including a number of indicators that are not collected annually or nationally.
- Continuing work on the development and implementation of valid, reliable and useful indicators is essential to better focus prevention and improvement efforts. The further development of employment and education indicators relating to state and territory mental health consumers is supported, as is development of national data on self-harm (including people treated but not admitted).
- A systems approach to suicide prevention should continue to be implemented and evaluated, and if successful rolled out more broadly.
- Evidence-based approaches to supporting people with mental illness to obtain and sustain employment or educational opportunities should be further implemented and evaluated, and the evidence base should be further developed.
- Promising approaches to reducing smoking rates among people with mental illness should be further investigated, implemented and evaluated.

8.2 Introduction

Significant mental health reform has been underway in Australia for more than 20 years. The National Mental Health Services in Australia report series monitors reform, and is one of several regular reports on mental health. The Fifth National Mental Health and Suicide Prevention Plan (Fifth Plan) was accompanied by an Implementation Plan (National Mental Health Performance Subcommittee, 2017), and proposes or establishes new outcome-oriented indicators agreed for monitoring progress. Some of these indicators, particularly those in the area of social inclusion and recovery, are appropriate indicators for national monitoring of population health. The National Mental Health Commission (NMHC), established in 2012, is responsible for producing an Annual Report Card on Mental Health and Suicide Prevention. The NMHC has also issued a set of mental health targets and indicators for Australia (2013) and has been made responsible for monitoring and reporting on implementation of the Fifth Plan. Mental health targets and indicators are an important element of the Fifth National Mental Health and Suicide Prevention Plan.

Suicide and suicide prevention

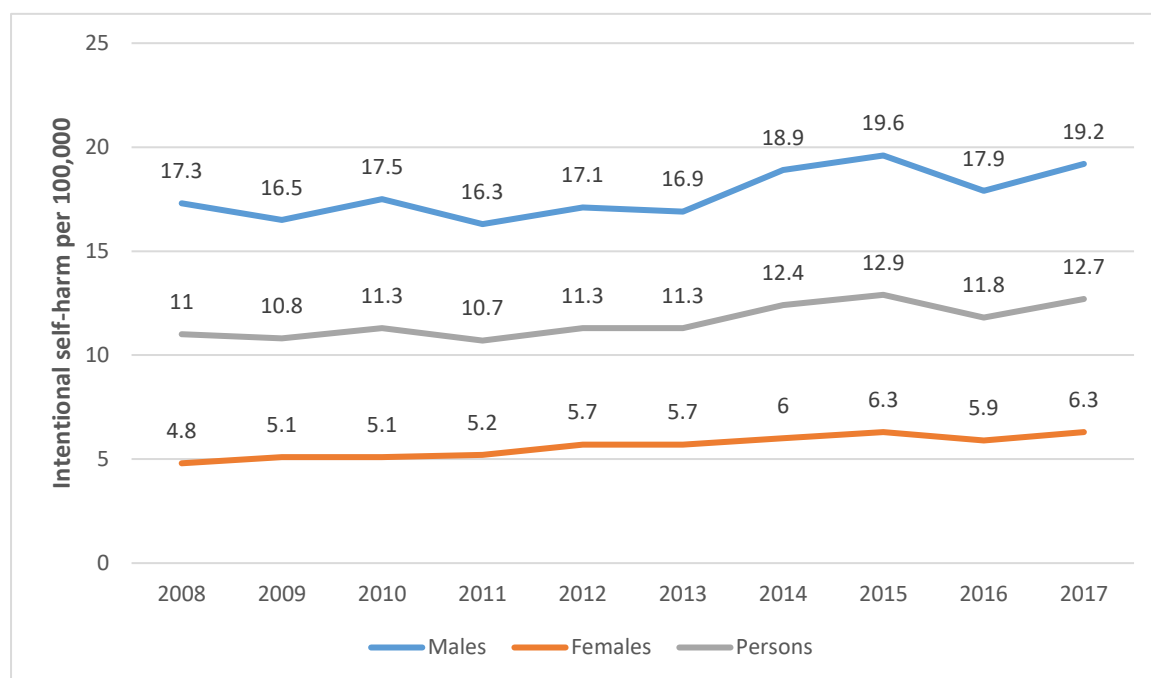
In 2017 more than 3,000 people died by suicide (Australian Bureau of Statistics, 2018), while in 2007 an estimated 65,000 Australians attempted to end their own life¹¹. Suicide is the leading cause of death among people aged between 15 and 44 years, and is more common

¹¹ These figures are preliminary figures, subject to revision (further determination from Coroners).

among men, ATSI people and people living outside of major cities (Australian Bureau of Statistics, 2016).

National data on suicide are collected and reported. The ABS has instituted a significant quality assurance process to improve the quality of coding of deaths data. Figure 8.1 shows the national trend in suicide rates from 2008 – 2017. The overall rate has increased from 11.0 to 12.7 per 100,000 people. The rates for both male and female has increased and the trend is consistent.

Figure 8.1: Average annual suicide rates per 100,000 population.



Source: (Australian Bureau of Statistics, 2017)

Although self-harm prevalence or incidence would also be an important indicator of population mental health, national data on self-harm are limited, and complicated by the need to potentially link repeat episodes to a single individual. Where harm results in a hospital admission, data are available on a state-by-state basis. If a person presents to hospital with self-harm but is not admitted, national data are not currently available. Several reports have discussed problems with statistics for suicide and self-harm, and expressed concern that the data are affected by errors, perhaps more than most other causes, due to difficulty in ascertaining the true motivation for actions and the effects of social stigma (Australian Institute of Health and Welfare, 2014). People may choose not to disclose that their injuries resulted from intentional self-harm, or may be unable to do so because of the nature of their injuries or because their motives were unclear. In children these issues can be even more difficult to assess. The Fifth Plan includes an indicator to measure rates of follow-up after suicide attempt or self-harm. This too appears worthwhile but currently requires work to confirm feasibility.

Surveillance of population mental health

Surveillance is crucial for mental health, as it is the foundation for well-informed, evidence-based decision making on mental illness policy, service provision and prevention. The NSMHWB, conducted during 1997 and 1998, provided the first comprehensive source of information on the distribution and type of mental health problems in the Australian population. The NSMHWB was repeated in 2007. The NHS includes a mental health component, although does not collect data on specific mental health problems. Specialised national psychosis

surveys were carried out first in 1997/98 and again in 2010 (the Survey of High Impact Psychosis). The second Australian Child and Adolescent Survey of Mental Health and Wellbeing was published in 2015 (Department of Health, 2015).

An ongoing commitment to mental health surveillance in Australia is essential. Regular surveillance is needed to assess changes over time, and provide current information about mental health needs and service utilisation in the community that can inform future policy and planning. Refinements in surveying methodology are also needed to identify common risk factors that may act as determinants of mental health and wellbeing (Department of Health and Ageing, 2005), along with factors that reduce help seeking for mental health problems.

Performance indicators established in the Fifth Plan are an important step in measuring and reporting performance in health and other relevant portfolios. Information on education and employment participation, for example, are important in assessing social inclusion and recovery. Further development of these indicators, a continued focus on collecting and linking state and territory data on mental health service use, and collating evidence from related data sources and targets will provide information that can support better outcomes for people with mental illness.

Service coverage

Population coverage by mental health services is a challenge for governments, and measuring coverage is difficult. Most Australians who meet diagnostic criteria for mental illness do not experience a need for professional assistance of any kind (Department of Health and Ageing, 2013). States and territories focus on delivering services to people with severe mental illness. The percentage of people seen by state and territory mental health services has remained relatively stable, at about 1.8% over the last five years to 2015 (Australian Institute of Health and Welfare, 2018). In recent years there has been significant growth in the number of people seen by Medicare-funded mental health services (a rise from 3.1% of the population in 2008-09 to 9.8% in 2016–2017) (Australian Institute of Health and Welfare, 2018). The population treatment rate for mental disorders in Australia is estimated to have increased from 37% in 2006–07 to 46% in 2009–10, a remarkable increase by international standards (Whiteford et al., 2014). If Medicare Benefits Schedule settings remain unchanged, the treatment rate is expected to continue to rise, but as Whiteford et al. noted, increased access to services is not sufficient to ensure good outcomes for those with mental disorders.

Quality of service could be a more appropriate indicator than service coverage, but there are few national data sources available that adequately assess quality of care. Such an indicator may require patient-reported outcomes, which are not feasible to implement nationally at present. Indicators such as restraint and seclusion rates may be too simplistic to adequately indicate quality, and adequate measurement of such outcomes is subject to limitations such as the context and data source. Delivering services to meet the mental health needs of people in rural and remote areas continues to remain a challenge, and is the focus of a Senate inquiry established in 2018 (Parliament of Australia, 2018).

8.3 Relevance of WHO targets

The National Mental Health Report 2013 posits that suicides are the starkest indicator of the mental health of a nation. In Australia, suicide was the 13th leading cause of death in 2017, and is leading cause of death for people aged 15-44 (Australian Bureau of Statistics, 2018). The national suicide rate is a relevant and appropriate indicator of population health.

Service coverage may be less appropriate, as measurement and selection of appropriate indicators remains challenging. Measures of social inclusion, such as employment and education participation rates, better reflect important outcomes for people with mental illness and are more feasible to collect regularly through the NHS. The Fourth Plan Measurement

Strategy notes that a range of evidence highlights that people with mental illness are over-represented in national unemployment statistics, and that untreated mental illness is a major contributor to lost economic productivity. Similarly for adolescents and young people, the onset of mental illness can disrupt education, and the transition from school to work. The Fourth Plan Measurement Strategy proposed additional complementary measures of participation in employment and education:

- proportion of state and territory mental health consumers aged 16–64 years who are employed (as defined by standard ABS definition); and
- proportion of state and territory mental health consumers aged 16–30 years who are employed (as defined by standard ABS definition) and/or are enrolled for study in a formal secondary or tertiary qualification.

These additional measures would provide a way to monitor the social inclusion of people with severe and persistent mental illness, for whom education and employment related outcomes are often compromised. In Australia, the proportion of people with schizophrenia and employed based on studies in 1998 and 2003 were 19% and 16% respectively (Waghorn et al., 2012). In contrast, the employment rates for healthy working age Australians in 1998 and 2003 were 74% and 77% (Waghorn et al., 2012). The Fifth Plan does not account for education in its revised set of indicators, with no specific indicators for young people. Instead, the revised indicators focus broadly on the proportion of people with mental illness in employment and the proportion of carers of people with mental illness in employment.

The WHO targets do not encompass the physical health of people with mental illness, although people with mental illness often experience poor physical health. Consistent with international findings (eg. (Osborn et al., 2007; World Health Organization, 2014), a Western Australian study has shown the substantial impact of mental illness on life expectancy in that state (Lawrence et al., 2013). Mental illness was found to be associated with large increased risks of morbidity and mortality, and almost 80% of excess deaths were associated with physical health conditions, particularly heart disease, respiratory disease and cancer.

Poor mental health is a major risk factor for poor physical health, and vice versa. A recent national report card, *Australia's Mental and Physical Health Tracker* (Harris, Ben et al., 2018)–the first Australian study to quantify the risk of physical health conditions contributing to a wide range of mental health conditions – highlights the importance of addressing the common risk factors for both mental and physical poor health. Risk factors such as poor nutrition, physical inactivity, risky levels of alcohol consumption and tobacco smoking are shared risk factors for poor mental and physical health.

Targeting the life expectancy gap for people with mental illness is a worthwhile goal, and occurs in countries such as the United Kingdom (Department of Health (UK), 2013). In Australia, however, there is no ongoing data collection to facilitate accurate and timely measurement of this gap. Nonetheless, it is pleasing to see mortality gap for mental with mental illness as an indicator for the Fifth Plan, although developmental work is required.

At present, a more feasible, measurable target is a reduction in the smoking rate for people with mental illness. Smoking rates are significantly higher among people with a mental illness (Harris, Ben. et al., 2018), particularly among those with a serious mental illness (Greenhalgh et al., 2019). Smoking is a major determinant of physical health inequality in this population, and is partially responsible for increased mortality of people with serious mental illness. Data on both smoking and self-reported mental illness are routinely collected in the NHS, enabling verification of change in this indicator.

8.4 Proposed Australian target and indicators and feasibility

The Working Group proposes Australian Chronic Disease Targets and Indicators for mental health as shown in the following table.

Table 8.2: Proposed Australian mental health targets and indicators

Target ¹²	Indicators	Means of verification	Comment
Avoidable harm			
1. Reduction in the national suicide rate by 10% by 2020	<p>Number of suicide deaths per year per 100,000 population (WHO)</p> <p>The suicide rate as an age-standardised rate per 100,000 population (NMHC)</p>	<p>Routine annual registration of deaths due to suicide</p> <p>National data is collected and reported</p>	<p>The suggested WHO baseline year is 2012 or 2013. The suicide rate was 10.9 per 100,000 for 2013. From this baseline, the target would be 9.8 per 100,000 (reflecting ~265 fewer deaths based on current population)</p>
Social inclusion and recovery			
2. Improve employment rates of people aged 16–64 with mental illness, halving the employment gap by 2025	Participation rates by people with mental illness of working age in employment: general population	<p>Reported in the most recent National Mental Health Report</p> <p>Data source is the NHS¹³</p>	<p>The Fourth Plan definition of ‘working age’ is ‘proportion of population aged 16–64 years with mental illness who are employed (as defined by standard ABS definition)’</p> <p>In 2011–12, 53% of working age Australians with a self-reported mental illness were employed, vs 64% of those without a mental illness. Significant variation across states (Australia Bureau of Statistics, 2018)</p>
3. Improve participation rates of young people with mental illness in education and employment, halving the participation gap by 2025	Participation rates by young people aged 16–30 with mental illness in education and employment: general population	<p>Data source is the NHS.</p> <p>Reported in the most recent National Mental Health Report</p>	<p>In 2011–12, 79% of Australians aged 16–30 years with a mental illness were employed and/or enrolled in study towards a formal secondary or tertiary qualification, vs 90% of their same-age peers</p>

¹² Target 1 is sourced from WHO. Indicators 2 and 3 are from the Fourth Plan Measurement Strategy. Although tracking of indicators 2 and 3 is occurring, no target has yet been set. Target 4 is adapted from the NMHC National Targets and Indicators for Mental Health Reform

¹³ The Fourth Plan Measurement Strategy notes that the NHS will be supplemented by the Household Income and Labour Dynamics in Australia (HILDA) survey in the intervening years between NHS collections. However, HILDA has been found to introduce a major source of inconsistency in trend monitoring (Personal communication from Chair, National Mental Health Performance Sub-committee (NMHPSC), 4/11/15)

			(Department of Health and Ageing, 2013)
--	--	--	-----------------------------------------

Physical health of people with poor mental health

4. Reducing smoking rates of adults over 18 years with a mental illness by 30% by 2020 and by 60% by 2025	The proportion of the population with mental illness who report being smokers compared with the smoking rates for the population without mental illness (NMHC)	NHS	In 2004/5, 32% of adults who reported a mental/behavioural problem were daily smokers, vs 21% of all adults (ABS 2006). In 2011/12, 28% of adults with a mental /behavioural problem were daily smokers, vs 16% of all adults (Australian Bureau of Statistics, 2013). The target daily smoking rate for adults with a mental illness for 2020 is 19.25% and for 2025 11%
-----------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------	-----	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

8.5 Discussion

The global health targets for mental health include reducing suicide prevalence by 10% by 2020 and increasing service coverage for severe mental disorders. Reducing suicide prevalence consistent with the WHO target is challenging but feasible. The service coverage target is may be less appropriate indicator for Australia than measures of social inclusion and the physical health of people with mental illness.

Despite a large amount of research and literature in the area, suicide prevention remains an inexact process based on insufficient evidence (De Leo, 2002). Australia was one of the first countries to develop a national suicide prevention strategy. In 1998, the year prior to the National Suicide Prevention Strategy commencing, the age-standardised suicide rate sat at 14.3 per 100,000 (Australian Bureau of Statistics, 2000); however, in the last 10 years, suicide rates have not lowered significantly (Australian Bureau of Statistics, 2018).

The Centre of Research Excellence in Suicide Prevention (CRESP) and the Black Dog Institute have proposed a systems approach to suicide prevention. This multisectoral, community-based approach draws on successful international examples (Centre of Research Excellence in Suicide Prevention and Black Dog Institute, 2015). It includes interventions to be jointly implemented, such as greater training of GPs in assessment and treatment of patients at risk of suicide; school-based interventions; and more adequate coordination and assertion of care after a suicide attempt (particularly in emergency departments). A policy approach that applies multiple strategies nationally is likely to be most effective, but this requires coordination between state and federal governments, in partnership with a rigorous evaluation process (Baker et al., 2018).

This type of approach is beginning to be implemented in Australia, with activity delivered within communities through Primary Health Networks and supported by state, territory and federal governments, research institutes, and non-government organisations. Implementation commenced in 16 sites across Australia starting in 2017, although direct impacts may take several years or decades to emerge. The Fifth Plan includes a commitment to a national suicide prevention implementation strategy. The strategy should draw together

complementary evidence-based activities, supporting shared approaches to suicide prevention. However, meaningful reductions in the suicide rate are unlikely to occur by 2020.

Several approaches to increasing engagement of people with mental illness in employment have been demonstrated to be effective. Individual Placement and Support is a well-defined, evidence-based vocational intervention for people with severe mental illnesses (Williams et al., 2016). It uses principles of rapid job placement in positions matched to individual preferences with ongoing job support. International evidence demonstrates that such supported employment can significantly improve employment outcomes for people with severe mental illnesses, including in Australia. However, the success of such initiatives may require further improvements to disability employment services to maximise impact. The role of the National Disability Insurance Scheme in reducing barriers to employment and education participation for Australians with mental illness is unclear, as the Scheme has impacted on service delivery and most people with mental illness are deemed ineligible for the Scheme (University of Sydney, 2018).

Interventions to actively improve educational outcomes for people living with mental illness are undeveloped in Australia (Ennals et al., 2014). Supported education consists of programs and courses designed to provide pathways and supports for reengagement in education. Further research is needed to build evidence around appropriate interventions and educational structures for supporting young people with mental illness to achieve positive academic outcomes. Identifying and supporting programs with the greatest evidence for increasing positive outcomes in education and employment should be prioritised, with a need for buy-in from state, territory and federal governments.

People with mental illness have smoking rates that are higher than the general population (Harris, Ben. et al., 2018). However, there is little data available on smoking prevalence over time for this group. In Australia, it is estimated that more than 42% of all cigarettes are smoked by people with mental illness (Access Economics, 2007). Data from Victoria suggests that a third of people with mental illness who were hospitalised in Victoria in 2015-16 were smokers (Department of Health and Human Services Victoria, 2017). Tobacco programs and policies specific to people with mental illness may be required to maximise impact. Modifying existing services – such as Quitline – for people with a mental illness could benefit this population in supporting them to quit smoking (Harris, Ben. et al., 2018). Furthermore, people living with mental health issues should be offered standard physical health checks and diagnostic tests such as an Absolute Cardiovascular Risk Assessment to assist in promoting and supporting self-care and self-management tools to improve risk behaviours, for both mental and physical health (Harris, Ben. et al., 2018). Greater attention should be given to prevention, and encouraging young people with mental health problems not to commence smoking.

Population mental health indicators with regard to suicide, education, training and employment participation, and smoking, would provide key information on how Australia is progressing in a range of areas. A systemic approach to suicide prevention, and evidence-based approaches to employment, education and tobacco programs for people with mental illness would support Australia in achieving the global mental health target for suicide and improvements in the social inclusion and physical health of people with mental illness.

Key data sources and references

- Access Economics. (2007). *Smoking and mental illness/lcosts*. Melbourne, Sane Australia
- Australia Bureau of Statistics. (2008). *National Survey of Mental Health and Wellbeing: Summary of Results 2007*. Canberra, ABS
- Australia Bureau of Statistics. (2018). *National Health Survey: First Results 2017-18*. Canberra, ABS
- Australian Bureau of Statistics. (2000). *Suicides, Australia, 1921 to 1998*. Canberra, ABS
- Australian Bureau of Statistics. (2013). *Australian Health Survey: Updated Results, 2011-12*. Canberra: ABS Retrieved from <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/4364.0.55.003main+features12011-2012>.
- Australian Bureau of Statistics. (2016). *Causes of death 2015* (Cat no 3303.0). Retrieved from <http://www.abs.gov.au/ausstats/abs@.nsf/mf/3303.0>.
- Australian Bureau of Statistics. (2017). *Causes of Death 2016*. Canberra, ABS
- Australian Bureau of Statistics. (2018). *Causes of Death, Australia 2017*. Canberra, ABS
- Australian Institute of Health and Welfare. (2014). *Suicide and hospitalised self-harm in Australia: trends and analysis*. Canberra, AIHW
- Australian Institute of Health and Welfare. (2018). *National Health Services in Australia*. Canberra, AIHW
- Baker, S. T., Nicholas, J., Shand, F., Green, R., & Christensen, H. (2018). A comparison of multi-component systems approaches to suicide prevention. *Australasian Psychiatry*, 26(2), 128-131. doi:10.1177/1039856217743888
- Centre of Research Excellence in Suicide Prevention and Black Dog Institute. (2015). *National Suicide Prevention Summit, Background information*,
- De Leo, D. (2002). Why are we not getting any closer to preventing suicide? *Br J Psychiatry*, 181, 372-374.
- Department of Health. (2015). *The mental health of children and adolescents*. Canberra, Commonwealth of Australia
- Department of Health (UK). (2013). *No health without mental health: Mental health dashboard*,
- Department of Health and Ageing. (2005). *National Mental Health Information Priorities*. Canberra, Commonwealth of Australia
- Department of Health and Ageing. (2013). *National Mental Health Report 2013: tracking progress of mental health reform in Australia, 1993-2011*. Canberra, Commonwealth of Australia
- Department of Health and Human Services Victoria. (2017). *Victoria's mental health services annual report 2016-17*. Melbourne, Victorian Government

Ennals, P., Fossey, E. M., Harvey, C. A., & Killackey, E. (2014). Postsecondary education: kindling opportunities for people with mental illness. *Asia Pac Psychiatry*, 6(2), 115-119. doi:10.1111/appy.12091

Harris, B., Duggan, M., Batterham, P., Bartlem, K., Clinton-McHarg, T., Dunbar, J., et al. (2018). *Australia's Mental and Physical Health Tracker Background Paper*. Melbourne, Australian Health Policy Collaboration

Lawrence, D., Hancock, K. J., & Kisely, S. (2013). The gap in life expectancy from preventable physical illness in psychiatric patients in Western Australia: retrospective analysis of population based registers. *BMJ : British Medical Journal*, 346. doi:10.1136/bmj.f2539

National Mental Health Performance Subcommittee. (2017). *The Fifth National Mental Health and Suicide Prevention Plan*. Canberra, Commonwealth of Australia

Osborn, D. P., Levy, G., Nazareth, I., Petersen, I., Islam, A., & King, M. B. (2007). Relative risk of cardiovascular and cancer mortality in people with severe mental illness from the United Kingdom's General Practice Research Database. *Arch Gen Psychiatry*, 64(2), 242-249. doi:10.1001/archpsyc.64.2.242

Parliament of Australia. (2018). Accessibility and quality of mental health services in rural and remote Australia. Retrieved from https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Community_Affairs/MentalHealthServices

Scollo, M. M., & Winstanley, M. H. (2018). *Tobacco in Australia: Facts and Issues* (4th ed.). Melbourne: Cancer Council Victoria.

University of Sydney. (2018). *Mind the Gap: The National Disability Insurance Scheme and psychosocial disability*. Sydney, University of Sydney

Waghorn, G., Saha, S., Harvey, C., Morgan, V. A., Waterreus, A., Bush, R., et al. (2012). 'Earning and learning' in those with psychotic disorders: the second Australian national survey of psychosis. *Aust N Z J Psychiatry*, 46(8), 774-785. doi:10.1177/0004867412452015

Whiteford, H. A., Buckingham, W. J., Harris, M. G., Burgess, P. M., Pirkis, J. E., Barendregt, J. J., et al. (2014). Estimating treatment rates for mental disorders in Australia. *Aust Health Rev*, 38(1), 80-85. doi:10.1071/ah13142

Williams, A. E., Fossey, E., Corbiere, M., Paluch, T., & Harvey, C. (2016). Work participation for people with severe mental illnesses: An integrative review of factors impacting job tenure. *Aust Occup Ther J*, 63(2), 65-85. doi:10.1111/1440-1630.12237

World Health Organization. (2013). *Mental Health Action Plan 2013-2020*. Geneva, WHO

World Health Organization. (2014). *Information sheet: Premature death among people with severe mental disorders*, WHO

	Target	Indicator	Means of verification
1.1	80% of countries will have developed or updated their policies/plans for mental health in line with international and regional human rights instruments (by the year 2020)	Existence of a national policy and/or plan for mental health that is in line with international human rights instruments [yes/no]	Physical availability of the policy/plan and confirmation that it accords with international and regional human rights standards
1.2	50% of countries will have developed or updated their laws for mental health in line with international and regional human rights instruments (by the year 2020).	Existence of a national law covering mental health that is in line with international human rights instruments [yes/no]	Physical availability of the law and confirmation that it accords with international and regional human rights standards
2	Service coverage for severe mental disorders will have increased by 20% (by the year 2020)	Proportion of persons with a severe mental disorder [psychosis; bipolar affective disorder; moderate-severe depression] who are using services [%]	Numerator: Cases of severe mental disorder in receipt of services, derived from routine information systems or, if unavailable, a baseline and follow-up survey of health facilities in one or more defined geographical areas of a country Denominator: Total cases of severe mental disorder in the sampled population, derived from national surveys or, if unavailable, subregional global prevalence estimates
3.1	80% of countries will have at least two functioning national, multisectoral promotion and prevention programmes in mental health (by the year 2020)	Functioning programmes of multisectoral mental health promotion and prevention in existence [yes/no]	Inventory or project-by-project description of currently implemented programs
3.2	The rate of suicide in countries will be reduced by 10% (by the year 2020)	Number of suicide deaths per year per 100,000 population	Routine annual registration of deaths due to suicide (baseline year: 2012 or 2013)
4	80% of countries will be routinely collecting and reporting at least a core set of mental health indicators every two years through their national health and social information systems (by the year 2020)	Core set of identified and agreed mental health indicators routinely collected and reported every two years	Reporting and submission of core mental health indicator set to WHO every two years

9. Conclusion

This report supersedes the original (2015) *Targets and indicators for chronic disease prevention in Australia* report, which first proposed a set of chronic disease targets and indicators for Australia. The experts and organisations who have contributed to this report have re-examined the health targets and indicators established in 2015 using the best available evidence and data. As with the previous edition, this report identifies both population-based approaches to health improvement and disease prevention with a focus on prevention for individuals at high risk. The agreed targets and indicators are aligned with the World Health Organisation global targets for prevention and reduction of non communicable diseases by 2025. However, the targets proposed for Australia include mental health – which is separate in the WHO Global Action Plan – because of the strong inter-relationships between physical and mental health conditions.

Effective policies and programs are urgently required to address rising levels of risk factors for chronic diseases in Australia's population. Risk factors including physical inactivity, obesity, poor nutrition, smoking and alcohol misuse contribute to a range of chronic diseases which are the major causes of death and illness in Australia. These diseases are a global issue, and Australia is falling behind in implementing policies to protect and improve the health of our population.

The National Strategic Framework for Chronic Conditions acknowledges Australia's international commitment to the WHO Global Action Plan. However, national chronic disease targets are yet to be formally adopted into policy documents.

For the millions of Australians living with chronic diseases, and at risk of developing preventable chronic diseases, it is important for the nation and governments to commit to a long-term strategy to achieve the targets and indicators established in this report. A broad-based collaborative effort between Commonwealth, state and territory and local governments will be essential, and engagement of public, private and not for profit organisations, community organisations and business and industry will be critical. Key indicators should be agreed, tracked, measured and reported on regularly throughout that strategy. Underpinning this is a need to ensure the infrastructure exists for reliable and regular collection of the selected indicators.

The Mitchell Institute (incorporating the Australian Health Policy Collaboration) will continue to work with the experts and organisations who have contributed to this report, and with governments and other organisations, to promote national commitment to and accountability for chronic disease prevention, using the targets and indicators contained in this report. We will also continue to publish the series of national health report cards, led by *Australia's Health Tracker*, that we have developed to highlight high priority health indicators and targets that should be given immediate policy attention. The second edition of the national health report card, *Australia's Health Tracker* will be published in 2019.

Appendix one: working group members

Working Group 1 – Mortality, morbidity and high-risk populations

Rapporteur Dr Kevin McNamara, Deputy Director, Research, Deakin Rural Health, Deakin University School of Medicine, Adjunct Senior Research Fellow, Monash University Centre for Medicine Use & Safety

Ms Karen Booth, Australian Primary HealthCare Nurses Association

Prof. Alex Brown, Deputy Director, SAHMRI, Adelaide

Dr Steve Bunker, Clinical Research Adviser, Medibank Private

Ms Jan Chaffey, Camphill Healthcare, Brisbane and Australian Association of Practice Managers

Dr Christine Connors, General Manager Primary Health Care, NT Dept. of Health

Prof. Jon Emery, Professor of Primary Care Cancer Research, University of Melbourne

Dr Dale Ford, Improvement Foundation, Adelaide

Dr Rob Grenfell, Health Director, Health and Biosecurity, CSIRO

Prof. Mark Harris, Director, Centre for Primary Care and Equity, UNSW

Prof. Sabina Knight, Director, Mt Isa Centre for Rural and Remote Health, JCU

Dr Erin Lalor, CEO, National Stroke Foundation

Dr Mark Morgan, Hills Medical Practice, Adelaide

Prof. Ian Olver, Director, Sansom Institute, University of South Australia

Mr Bill Stavreski, National Director, Data and Evaluation, National Heart Foundation

Prof. Nigel Stocks, Head of Discipline of General Practice, University of Adelaide

A/Prof. Ron Tomlins, President International Primary Care Respiratory Group and University of Sydney

Former members:

Chair Dr Andrew Knight, Fairfield General Practice Unit, UNSW and Clinical Adviser, Improvement Foundation

A/Prof. John Rasa, CEO, Networking Health Victoria

Working Group 2 – Alcohol

Chair Prof, Kypros Kypri, Senior Brawn Fellow, School of Medicine and Public Health, Newcastle University

Rapporteur Dr Michael Livingston, NHMRC Early Career Research Fellow, National Drug and Alcohol Research Centre, UNSW.

Prof. Steve Allsop, Director, National Drug Research Institute, Curtin University

Prof. Tanya Chikritzhs, National Drug Research Institute, Curtin University

A/Prof. Peter Miller, Principal Research Fellow, School of Psychology, Deakin University

A/Prof. Kerry O'Brien, School of Social Sciences, Monash University

Prof. Robin Room, Centre for Alcohol Policy Research, La Trobe University

Prof. Maree Teesson, Director, NHMRC Centre of Research Excellence in Mental Health and Substance Use (CREMS National Drug & Alcohol Research Centre, UNSW

Mr Michael Thorn, CEO, Foundation for Alcohol Research and Education, Canberra

Working Group 3 - Physical Inactivity

Chair Professor Adrian Bauman, Sesquicentenary Professor of Public Health, The University of Sydney

Rapporteur Jaimie-Lee Maple, PhD Candidate, Deakin University, Research Assistant and Analyst, The Australian Health Policy Collaboration, Victoria University

Prof. Stuart Biddle, Program Leader, Active Living and Public Health ISEAL, Victoria University

Prof. Wendy Brown, Director, Centre for Research on Exercise, Physical Activity and Health, University of Queensland

Prof. Fiona Bull MBE, Program Manager, NCD Prevention World Health Organization

Prof. Phil Morgan, Deputy Director, PRC for Physical Activity and Nutrition, University of Newcastle

Ms. Rayoni Nelson, CEO, School Sport Victoria

Prof. Timothy Olds, Alliance for Research in Exercise Nutrition and Activity (ARENA), University of South Australia

Adjunct Prof. Trevor Shilton, National Active Living Lead, National Heart Foundation of Australia

Former members:

Chair Dr Lyn Roberts AO, Principal Adviser, VicHealth

Dr Jonathan Malo, Public Health Medicine Advanced Trainee

Prof. Jo Salmon, Director, Centre for Physical Activity and Nutrition Research, Deakin University

Working Group 4 – Salt

Chair Dr Jacqui Webster, Head, Public Health Advocacy and Policy Impact, Centre Director, WHO CC Salt Reduction; Associate Professor, University of NSW and Honorary Associate Professor, University of Sydney

Rapporteur Dr Carley Grimes, Postdoctoral Research Fellow, Deakin University

Prof. Bruce Neal, Senior Director, The George Institute, University of Sydney

Prof. Caryl Nowson, Chair of Nutrition and Ageing, Centre for Physical Activity and Nutrition Research Deakin University

Former members:

Chair Dr Bruce Bolam, Executive Manager, WHO Collaborating Centre for Excellence in Health Promotion, VicHealth

Ms Sonya Stanley, Principal Program Officer, VicHealth

Ms Kellie-Ann Jolly, Director of Cardiovascular Programs, Victoria National Heart Federation, VIC

Mr Scott Stirling, Advocacy Manager National Stroke Foundation

Working Group 5 – Tobacco

Chair Emeritus Professor Mike Daube AO, Hon DSci FPHAA FFPH, Faculty of Health Sciences, Curtin University

Rapporteur Dr Michelle Gooley, Burnet Institute

Mr Todd Harper, CEO, Cancer Council Victoria

Ms Kate Purcell, Director, Purcell Consulting NSW

Dr Sarah White Director, QUIT Victoria, Cancer Council Victoria

Working group 6 – Obesity and diabetes

Chair Prof. Stephen Colagiuri, Boden Institute, University of Sydney

Co-chair Associate Prof. Gary Sacks, ARC DECRA Fellow, Global Obesity Centre, Deakin University

Prof. Steve Allender, Co-Director WHO Collaborating Centre for Obesity Prevention, Deakin University

Prof. Louise Baur AM, Professor of Paediatrics & Child Health, Associate Dean and Head, The Children's Hospital at Westmead Clinical School, University of Sydney and The Children's Hospital, Westmead

Dr Julie Brimblecombe, Nutrition Program Lead Menzies School of Health Research, Darwin

Prof. Timothy Gill, Research Programs Director, Boden Institute, University of Sydney

Prof. Anna Peters, Director, Institute for Healthcare Transformation, Deakin University

Ms Jane Martin, Executive Manager, Obesity Policy Coalition, Cancer Council Victoria

Prof. Stephen Simpson AC, Director, Charles Perkins Institute, University of Sydney and Obesity Australia

Prof. Helena Teede, Monash Partners Academic Health Sciences Centre, Monash University

Former members

Dr Sharleen O'Reilly, NHMRC Fellow, School of Physical Activity and Nutrition Research, Deakin University

Prof. Boyd Swinburn, Alfred Deakin Professor, Deakin University and School of Population Health, University of Auckland

Prof. David Crawford, Centre for Physical Activity and Nutrition Research, Deakin University

Working group 7 – Mental Health

Chair Dr Philip Batterham, Fellow in Mental Health Research, National Institute for Mental Health Research, Research School of Population Health, The Australian National University

Prof. Philip Burgess, Professor of Mental Health Services Research, School of Public Health, University of Queensland

Dr Tim Coombs, Director of Nursing, Mental Health, Illawarra Shoalhaven Local Health District

Prof. Carol Harvey, University of Melbourne, Director, Psychosocial Research Centre/Northwestern Mental Health

Prof. Helen Herrman, Director Research, Orygen and Director, WHO Collaborating Centre for Mental Health

Dr Simon Rosenbaum, Senior Research Fellow, University of New South Wales

Dr Simon Rice, Senior Research Fellow & Clinical Psychologist, Orygen The national Centre of Excellence in Youth Mental Health

Former members

Ms Penny Tolhurst, Manager, Chronic Disease Program, Australian Health Policy Collaboration

Prof. Jane Pirkis Director, Centre for Mental Health, School of Population and Global Health, University of Melbourne



Mitchell Institute at Victoria University
300 Queen Street, Melbourne, Victoria 3000
+61 3 9919 1820
info@mitchellinstitute.org.au
mitchellinstitute.org.au